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A MONTHLY JOURNAL
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DEVOTED TO WESTERN INTERESTS.

OFFICIAL ORGAN OF THE
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(A National Organization.)

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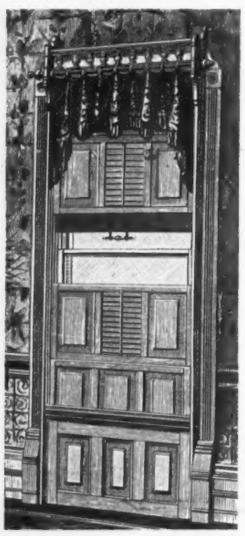

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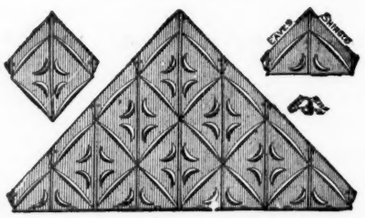

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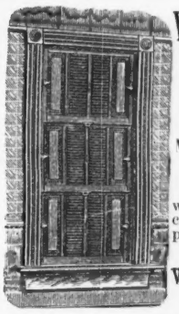

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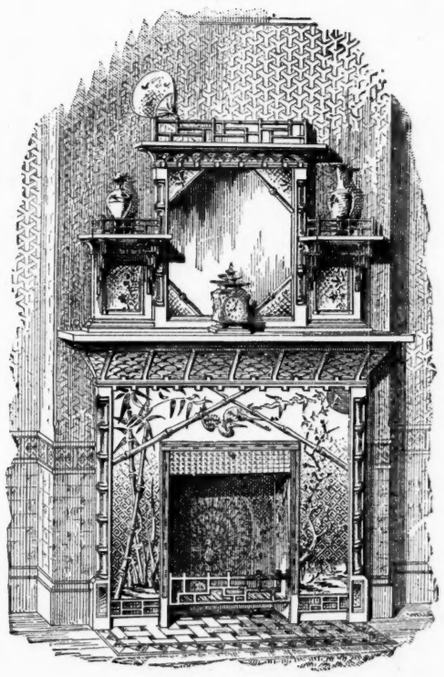

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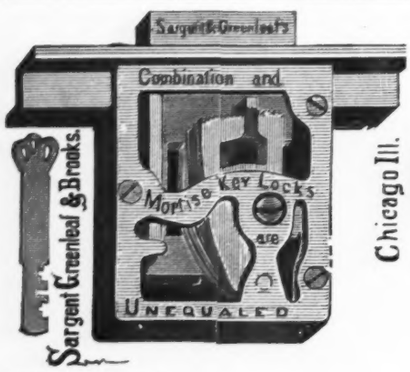

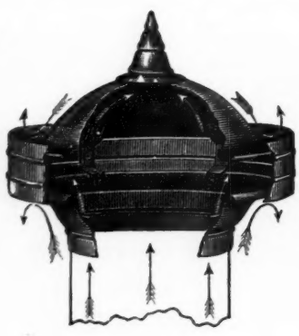

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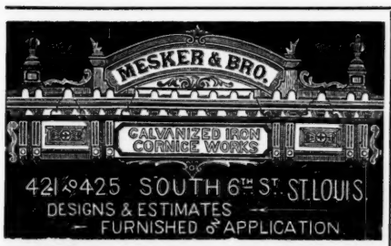

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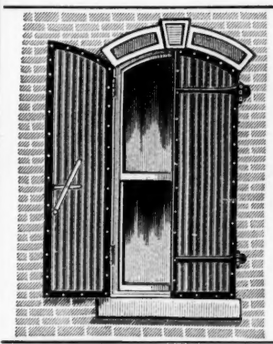

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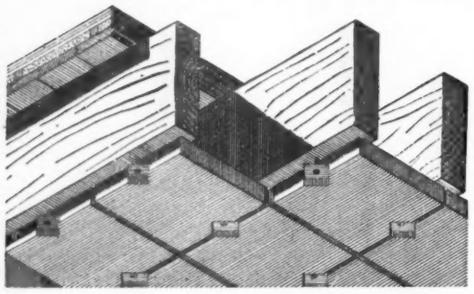

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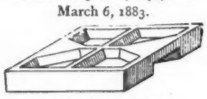

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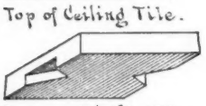

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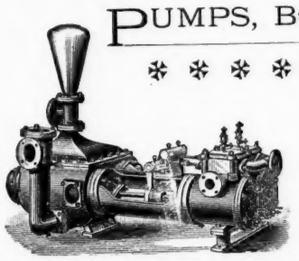

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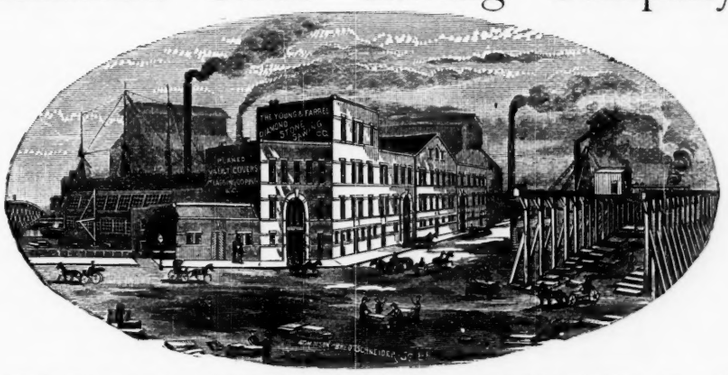

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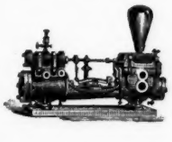

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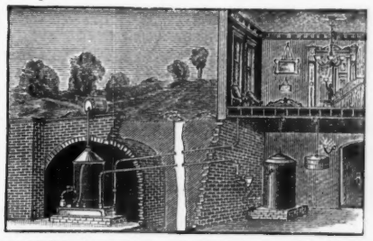

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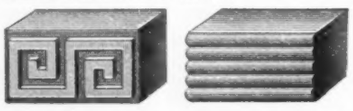

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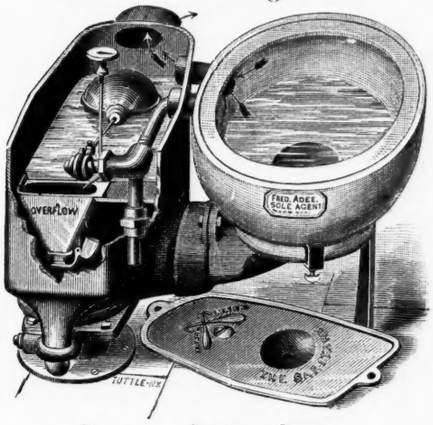

FIG. 1. STRAIGHT OUTLET.

With Painted or Enameled Reservoir.

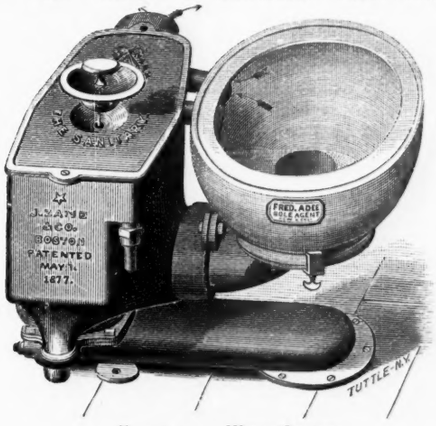

FIG. 2. WITH OFFSET.

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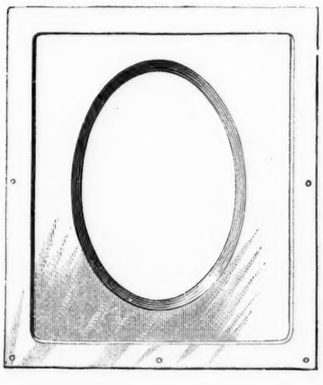

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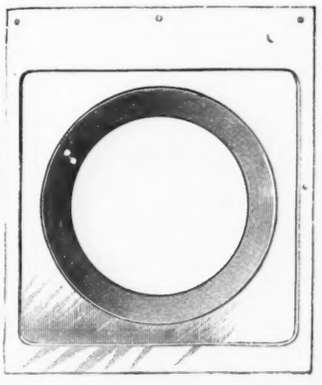

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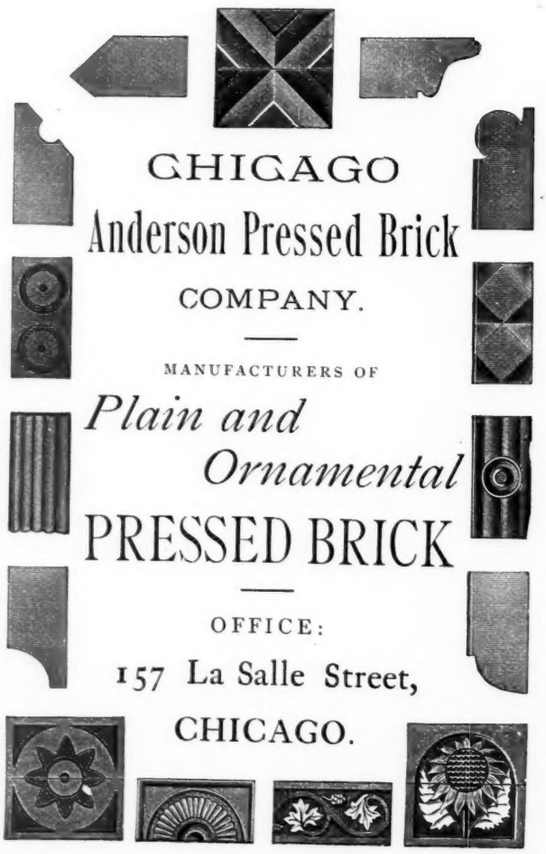

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Vol. VI. No. 7

JANUARY, 1886.

THE

INLAND ARCHITECT AND BUILDER

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COMPETENT critics have pronounced THE INLAND ARCHITECT AND BUILDER "the handsomest journal of its class published in this country." The cost of maintaining the journal at this high standard, and of publishing our extra or "Intermediate News Number," is so great that we are compelled to announce that on February 1, 1886, we shall advance our subscription price from $2 to $3 a year, which will include both our regular monthly and our "Intermediate" number. Desiring to favor subscribers as much as possible, we make the following offer, namely: To all new subscribers sending us $2 before February 1, 1886, we will send THE INLAND ARCHITECT AND BUILDER for one year, and to all present subscribers who send us $2 before February 1, 1886, we will continue their subscriptions one year from date of expiration. Thus those who have subscribed any time since November, 1884, can, by sending $2 before February 1, 1886, receive the journal for a year longer than is now due them.

THE annual report of the Supervising Architect of the United States for 1885 shows that there are now eighty new buildings under construction, ranging in cost from $25,000 to $2,000,000, calling for a total of $8,511,400, the expenditure during the year being $2,438,709. Mr. Bell, in his report, recommends the reorganization of the office upon a plan similar to that the revised Stockslager bill provides.

KANSAS was the first state in 1886 to notify us of a convention to form a state architectural association. The following call has been issued:

TOPEKA, KANSAS, December 23, 1885.

To the Architects of the State of Kansas:

GENTLEMEN,—There will be a meeting of the architects of the state of Kansas, at the parlors of the Windsor Hotel, in this city, at 4 o'clock P.M., January 25, 1886, for the purpose of organizing a *Kansas State Association of Architects*, whose object shall be to work in harmony with the *Western Association of Architects*, for the purpose of raising the standard, and advancing the interests of our profession. Only those who are engaged solely in the planning and supervision of buildings are eligible to membership. A full attendance is desired.

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This call, brief, terse, and comprehensive, can well serve as a model for other states, while the promptness with which the architects of that state have set about following out the recommendations of the Western Association at the late convention upon this subject should be imitated. The early months of the year are best suited to the work, as the spring brings with it a rush of business and makes it impossible for architects to give even a subject so important as association, a large degree of attention especially where the distance to the point of meeting is great. We hope to receive notification of a like activity from the committees in charge of organizations from each state before the end of the month, and meanwhile, congratulate the architects of Kansas upon their promptness, wishing them a most successful convention. No architect in the state can afford to be absent.

THREE important architectural conventions will meet in the month of January, these being the annual meetings of three state associations. The Architectural Association of Minnesota holds its annual meeting at Minneapolis on the 5th. The Missouri State Association of Architects at Kansas City on the 12th, and the Architectural Association of Iowa on the 13th at Des Moines, and we are informed that the Ohio architects will form at Columbus on the 12th. Kansas architects are preparing to form a state association of architects on the 25th, and Indiana and Florida will also meet at an early date. The prospect is that the present year's work for each of these will be exceedingly important, the course outlined by the late national convention being such as to bear directly upon the work of state associations, including many important measures largely dependent upon them for permanent success. In the states where the legislatures will meet this season, the bill regulating the practice of architecture should be vigorously pushed toward enactment, the best method of procedure to attain this being readily determined and marked out by the assembled architects. The subject of competition should also be discussed. In each state, while the evil is the same, the conditions may differ largely, and while we strongly recommend that the text of the report submitted to the Western Association upon this subject be adhered to, a full discussion should be indulged in regarding the best method to be pursued in regulating and controlling future competitions. The proposed law governing the government architectural office should receive attention, and while the matter is now wholly in the hands of the committee appointed to care for it, the state association as a whole and its individual members can do much toward securing its passage by calling upon the congressmen of their respective districts, and, by explaining its advantages to the public,

secure their coöperation. Among the subjects of minor importance that should receive consideration is the proper status and also the education of the draughtsmen, and where it is not possible to secure architectural colleges or schools of design, measures should be taken to start architectural clubs through which the draughtsmen can reach a greater proficiency than is possible in following the routine mark of the office. The time of year for these meetings is well chosen and each should be attended by *every* architect in the respective states, as no architect can afford to lose the benefits he will personally derive, while he owes at least this much support to his profession.

THE revised Stockslager Bill, in the form proposed by the Western Association of Architects and the American Institute deserves the support of every architect in the country as tending equally to the welfare of the public and of the whole profession. This does not mean that we consider it perfect in all its features, but it is an excellent beginning, and once in operation, we expect that experience will gradually eliminate its minor defects. There is, however, one feature of this amended bill which would seem to have undergone less searching scrutiny than the rest, viz.: the limit of cost, which, as the bill now stands, is to be fixed rigidly in advance of every competition. This we regard as in a measure a *vestigium retrorsum*. It is certainly not in accord with the latest and most successful experience in European competitions for government buildings. We are not to be understood herein to advocate competitions as a sound policy for any owner, whether it be a private citizen or a nation of forty millions of people. But as a half loaf is better than no bread, the Stockslager plan is vastly better than what we have now, and it will doubtless lead to something better still in the future, therefore we favor and wish to promote its successful working. Every one at all familiar with architectural competitions must be aware of the extreme difficulty of fixing in advance a limit of cost. Very generally when the drawings come to be examined, the prescribed limit of cost is quietly dropped, forgotten, ignored, and a produce exchange, for example, which was to cost not over six hundred thousand dollars, is built at an expense of several millions. But certainly we do not wish to retain in this important bill a feature which shall lead to such bad faith as this in the proposed government competitions.

ON the other hand, if the cost limit is to be adhered to, it cannot fail in many cases to deprive the government of the best design for its proposed building. This with government work is a misfortune most seriously to be deprecated, since this work is sure to be regarded as a standard for imitation in a large measure. It is also a result for which in government work there will be absolutely no excuse, save this unwise provision of the law which regulates the competition, the commission to be established per Stockslager Bill, being thoroughly competent to judge wisely in all respects as to the appropriateness and other merits of the designs received. Now in advance of any appropriation, and of any limit of cost by congress, or by any other authority, let the Commissioner of Public Buildings be instructed by congress to prepare a programme and invite competitive plans for a new postoffice, for example, in the city of———, the programme of requirements to be as full as possible, but the competitors to exercise their own judgment as to cost; then when the plans are received, the jury, being absolutely unhampered in this regard, will be free to select such plan as may appear to them in all respects the best for the place, and can report to congress accordingly. Then, if their report be approved, it will be in order to pass a bill fixing the limit of cost of the new building. This is, we think, the business way of doing it, and the results could not fail to be most satisfactory in respect both to the quality of the buildings erected and the economy of expenditure.

THAT fire insurance losses are largely governed not only by the character of the construction of each individual building, but to a greater or lesser extent by that of its neighbors, is evident to everyone who pays insurance upon realty. The *Rough Notes* of Indianapolis, the most progressive and authoritative fire insurance journal in the West, recently gave some interesting facts upon this subject, using the increased number of fires in Indiana as a text. Examining into the causes they appear to be few and forcible, and their effects involving the loss of a large amount of capital to the state. From this showing it appears that the losses paid have approximated the amount paid for insurance, and that no state law exists which directs the collection of accurate fire statistics, except where a party is accused of arson, though the companies insuring in the state have made a practice of collecting and classifying statistics of the causes of fires, which report shows 52 per cent of the fires in 1884 were of incendiary origin, in some districts the percentage reaching 70. The result of this has been that some companies will not now write upon some classes of property. Perhaps this state has produced an exceptionally large amount of this class of criminality, but there are few states where the laws are sufficiently explicit to prevent that class of speculation which involves the burning of a building for the sake of collecting the insurance, while legislators have been very active in hedging the companies about with laws that not only are unnecessary, but impair their usefulness. The legislatures of the different states meeting this winter can render no greater service than by enacting wholesome laws, aimed not at the fire insurance companies, but at those criminals who insure but to unload their obligations upon the public. The causes of fires must be investigated and determined before the insurance adjuster is allowed to measure the obligation of his company to the insured, who in turn must be a co-insurer with the company to a considerable extent in order to reduce this evil of incendiarism to the minimum.

PROBABLY the most important suit to collect commission for services ever entered by an architect in this country is now before the United States Circuit Court of New York, the plaintiff being Architect Henry G. Harrison of that city, and the defendant Mrs. Cornelia N. Stewart, the widow of the late A. T. Stewart. The suit is to recover regular commission for architectural services in the erection of the Garden City Cathedral, which was commenced in 1876 and recently completed. Mr. Harrison claims commission upon the whole work, and seeks to recover $95,732.12. The entire commission, the architect claims, is $110,786.68. This, with money advanced, made the sum of $113,584.24, of which $17,852.12 was paid on account prior to 1883. As the owner refuses to state the exact total cost of the cathedral, the architect estimates it at $1,500,000.

ARCHITECT L. S. BUFFINGTON, of Minneapolis, has a similar case, having been obliged to sue the West estate for his commission upon the erection of the West hotel, which cost upward of a million and a quarter. Two such notable suits, at widely separated points at the same time, show that the custom (for the practice is unfortunately so general as to be a custom) of contesting an architect's claim for services seems to have increased rather than diminished, and it is time that the law-makers of the country established

a law or legalized a code by which an architect would be as certain of his commission for services rendered as the workman upon the building. As it now stands the architect is about the only practitioner following an honest calling whose rights are not recognized and the value of whose services at least approximated by law.

"THE owners of the ground have not yet been consulted," is the candid admission which formed the closing lines to a long description of an extensive building improvement in a prominent daily journal. True, the architect's name was given, the style of the building commented upon, the different materials that would enter into its construction and embellishment given with an indisputable tone of authoritative knowledge, and the people to be benefited were congratulated, but "the owners of the ground had not yet been consulted." We do not wish to criticise or lay strictures upon the conduct of the public press, but we feel that in their zeal to contribute "all the news" they often miscalculate its value, and would show them wherein these premature reports work no good, except as far as they may excite gossip, and work a real hardship upon everyone concerned. To illustrate, A has $200,000 which he can invest. He sees a corner lot which B has offered for sale for $50,000. He consults architect C, and is told that $150,000 will erect a building such as he desires on that lot. To make sure before buying, A has his architect make preliminary sketches. At this point a bright real estate reporter has heard a rumor about the proposed building and calls on Architect C. He is told that nothing definite is settled upon. He immediately designs a building in his mind, and the result is that the morning paper contains a full description of A's proposed improvement. A is at once informed by B that $100,000 is the price of that lot or that it is not for sale, and Mr. A cannot buy, Mr. B loses the chance of selling at a fair price by thinking that he can "bull" the market, Architect C is out five per cent on $150,000, and the newspaper has added one more false report to the list that finally makes it valueless to the class of readers it hoped to benefit; and if we went farther we might conclude with the fact, that that particular reporter and possibly all reporters would find it extremely difficult to get the fleeting item from at least one office. If the public journals wish to really benefit the public, as far as the designing and construction of buildings is concerned, they can do so with a much larger chance of success and infinitely greater credit to themselves by noticing and aiding by intelligent action the great movement toward architectural improvement that is now engrossing the attention of the entire architectural profession. By giving their support to the revised Stockslager bill for the reröganization of the government architectural offices, the bill to be placed before the legislatures of each state for passage, the report of the committee of the Western Association of Architects upon competitions, and their space to their explanation or criticism, they would then be doing a real public service instead of defeating public enterprise by premature reports.

THAT "tin roofing has been in use for the last century, and, beyond question, has given more satisfaction, when the proper quality has been used, in connection with the right kind of workmanship, than any other material employed for a similar purpose," is asserted by no less a reliable firm than Gummey, Spering, Ingram & Co., of Philadelphia, and they further assert that "it affords the greatest protection to a building from the action of the weather and renders it proof against the effects of lightning, having never yet heard of a single instance when a building roofed with tin has been struck by lightning or seriously damaged from such cause." The roofing material manufactured by this firm is made with special regard to its durability, lightness, simplicity and cheapness and facility of replacement. They are made so as to be artistically treated, conforming to any desirable design, a ridge-coping made of galvanized iron being also a part of the roofing material.

Roman Architecture.*

BY W. L. B. JENNEY, ARCHITECT.

NOT long ago the history of architecture commenced with the classic period and at a very high state of perfection in the art, to account for which we were forced to imagine an earlier architecture in wood, that we assumed had long perished, leaving to us only the glorious results of their long experiments worked out in stone and marble.

The discoveries in Egypt, Assyria, Chaldea, on the plains of Persepolis, in Asia Minor, etc., have given us new volumes of far more ancient date, that show us the origin of much that was found in Greece and Rome, and yet although we have gone back two or three thousand years or more, we find ourselves asking the same questions, from whence did these most ancient people derive their civilization and their arts? Is there nothing new under the sun? As the Romans did not invent architecture, I may be pardoned for a few words of introduction.

Good engineering is the result of the requirements, modified by the material at hand and by other conditions that there obtain, or as the evolutionist would say, by the environment.

Good architecture is the application of the fine arts to engineering, the rendering of the form and proportions of the work pleasing, without injury to its usefulness, and then for further embellishment the construction is decorated.

Architecture is a useful art, based on the science of engineering. As a rational consequence the construction should be decorated that is pleasingly accented. From this it follows that constructed decoration is not in harmony.

My purpose is to give the salient principles of Roman architecture in a sort of off-hand way, for I have not had time for much preparation, in fact I am here only as a substitute, and you know from old war times we never did expect much from a substitute.

To understand the architecture of any period or of any people, one must understand the history of that epoch or of that people, not so much the story of their wars and the names of their kings, as the history of their civilization, the character of their country, the habits of the people, their religion and their political aims, that part of history which, until recently, most historians entirely neglected. Without this knowledge Roman architecture has no meaning.

The Romans were eminently a practical people. For example, they were famous road builders, and the great national highways which they constructed throughout their territories did much to bind them together. By their use Rome kept up constant communication with all parts of her possessions, and could quickly send her legions wherever wanted. The genius of the Romans was displayed in the most useful branches of engineering and architecture. They not only built military roads that exist today, but also bridges, aqueducts, harbors, drainage works, etc.

The Greeks gave little attention to these practical problems, but the Romans located their highways in direct lines from the capital, and spared neither time, labor nor money to make them perfect, filling up hollows, or spanning them with viaducts, tunneling the mountains, and bridging the streams. See with what care their roads were constructed. The location was carefully studied; a breadth of from thirteen to fifteen feet was marked out by ditches on either side. The loose earth and vegetable mold between these ditches was removed, and then the road bed was constructed, which in some instances reached the enormous thickness of twenty feet,—first small, loose stones, then a concrete of broken stone and fragments of brick and pottery cemented with clay and lime, and then a surface of pounded gravel and lime or a pavement of stone. Mile stones were erected along these roads. The remains of one — a gilded marble pillar — may still be seen in the Roman Forum. It was known as the golden mile stone.

Although road building is not architecture, nothing serves us better than these great and everlasting military roads to illustrate the energy, the scientific skill, and the great practical character of the Romans. It is by these same qualities that we must judge their architecture, and not by the standard of the Greeks—pure æsthetic art—for by that standard alone we could easily show that there was no Roman architecture, for the Romans left nothing to compare with the Athenian Parthenon, which, to quote from Fergusson, "for the exquisite perception of the highest and most recondite principles of art ever applied to architecture, stands utterly and entirely alone and unrivaled, the glory of Greece and a reproach to the rest of the world." But such comparisons are misleading if carried beyond the showing of the contrast between Greece and Italy. The people were not the same. Roman civilization was not that of Greece. The Greeks could no more satisfy the practical requirements of the Romans, than the Romans the high æsthetic ideas of the Greeks. Each has his place, and we must judge them by their own standards. What were their aims, and how well were they satisfied?

Our knowledge of Greek architecture was derived from the temple. The Greek temple was practically a single room, with no windows, receiving its light from above. The temple was placed on an eminence, and beneath a clear sky. You can easily see how absurd it is to copy a Greek temple for modern wants, and yet they are to be found as churches, town halls, postoffices, and even dwellings. At one time this was the fashion, as the Gothic became a little later after the building of the English Houses of Parliament, and as the Queen Anne, the Colonial, and Crazy Quilt styles are today. Even the Church of the Madeleine, built by Napoleon I., in Paris, is a failure, although erected with much ability and at enormous cost. The Greek temple has for one of its characteristics horizontality. In Paris the Madeleine is surrounded by high buildings, much to its injury. In short, it is out of place, and not in harmony with its surroundings. It was not for the temple alone that the Romans required an architecture, but for all classes of public buildings; not for one story only, but for several stories. For this reason, and to enable them to use small material, they introduced the arch.

*A paper read before a literary society of the New England Church congregation, Chicago, January 5, 1886. Illustrations were drawn during the lecture on the blackboard in colored crayons.

There were marked differences in the history of Greece and Rome that materially affected their architecture. The Persian invasion forced upon Greece a struggle for existence. With a heroism almost without parallel they defeated the Persians. Then followed a jubilant outburst of patriotic enthusiasm, with which she commenced a short but most glorious and brilliant career. Favored by comparative repose, the arts developed as they had never done before, and unless we except the thirteenth century, that grand century for Gothic architecture in Europe, there has been nothing seen since this epoch in Greece that could at all compare with it.

The Romans, on the contrary, from the time they were but a band of robbers on the banks of the Tiber, until they had pushed their conquests over the known world, were almost continually engaged in great political or military projects, and had no time to give to the arts more than sufficient to serve their immediate needs. The one peculiar characteristic of the Romans was an aptitude to organize and to govern. Before the Romans, to conquer was to rob, to enslave, and to destroy. The Romans of the early republic had no art of their own, but were surrounded by nations among which the arts had already reached an extraordinary development. Campagna and Etruria were covered with religious, secular and domestic structures, of which there are remains of great beauty.

The Etruscans, from a very remote epoch, possessed the arch and the vault. The East used the arch long before it was known in the West. There are chambers around the pyramids and temples at Thebes that are roofed by stone and brick arches of a semi-circular form. A curved form of roof is the third pyramid at Gizeh indicates that the Egyptians used the arch as early as the fourth dynasty, 4000 B. C. At Beni-Hassan, on the bank of the Nile, curvilinear forms appear in the roofs 3000 B. C. The city gates at Khorsabad were spanned by beautiful and perfect arches. The decorations were blue enameled brick, with figures and stars in warm yellow. This shows that in the time of Sargon the arch was well understood.

There is an old saying that the arch never sleeps, and is constantly tending to destroy the building, especially if aided by earthquakes and the roots of trees. Still, the great advantage of covering large spaces with small stones or brick is so great that it was very extensively used by the Romans.

Cæsar says in Sallust: "Whenever our people saw among their allies or their enemies anything which they could make useful they took care to appropriate it and apply it to their needs at home." Here in a few words we have the key to Roman art; it was captured. The Roman soldiers obtained their equipments from many sources; their bucklers were Samnite, their swords Spanish, etc. From the Etruscans the Romans obtained the round arch; from Campania the general arrangement of their sacred edifices, the Greek orders, and the plans and decoration of their domestic structures.

The Romans sought to unite two conflicting systems—the arch and the lintel, obtained from two distinct sources. Violet le Duc says: "Their ideas of art were those of pirates, who, with barbarous and tasteless pride, adorn themselves with foreign and incongruous spoils." The Romans demanded but one thing of architecture, that it should agree with his political system, and be a useful work, filling exactly a prescribed programme. They made roads, bridged rivers, introduced water into cities by means of immense aqueducts, built amphitheaters for public reunions for the pleasures of the people. The Romans found the Greeks superior workmen and took them to Rome to decorate Roman constructions. The plans of the edifices were Roman, the construction, the pier and arch, were imported from Etruria. These the Greek workmen were employed to decorate, and as the Greeks knew only the orders these they plastered on to the Etruscan arcade, to the injury of both.

It is a principle "that intellectual independence, free criticism, study and discussion are necessary for the development of art, and as long as the field was open to these art always flourished, while, on the contrary, art has always become enfeebled and destroyed whenever forced from its natural growth by arbitrary fashion. There is a lesson here of use to us today.

Viollet-Leduc says: "In Greece art, because it was loved, was made free; there it ruled without a question of authority; it was pure and simple, because unrestrained. While among the Romans, art was absorbed by the state, yielded to laws outside itself and became an instrument."

It is usual in speaking of classical art, to confound Greek and Roman, while in fact they are diametrically opposite. Greek art was free, Roman art enslaved. Both Greek and Roman art are Aryan developments based on a Turanian civilization, which it has superseded. The causes just mentioned and many others produced widely different results. I have alluded to Etruria as the source from which the Roman derived his construction. Etruria was settled from Asia Minor about 1200 B. C., and became subject to Rome about 330 B. C. In the early days of Rome she was an Etruscan city under Etruscan kings and institutions, and after the conquest Etruria was long the equal of Rome and her instructress in religion and the arts of peace.

All we know of the Etruscans is derived from their tombs; they exist in hundreds at the gate of every city, pointing clearer than aught else to the Turanian origin of the Etrurians.

The theaters and amphitheaters are the only civil buildings, of which there are any remains in Etruria that offer any idea as to what they were like. The form of the amphitheater as adopted by the Romans is essentially Etruscan. There are remains of many works of utility, drainage works, bridges and city walls, monuments of their science and skill that, Fergusson says, "their successors never surpassed." They do not seem to have had any temples or palaces worthy of attention; in fact, the only interest Etruscan art possesses is that it is an introduction to the Roman. From the city gates, aqueducts and bridges, we know that the Etruscans used the radiating arch at a very early date. They were constructed with deep vousoirs or arch-stones, with elegant moldings.

During the first two and a half centuries Rome was an Etruscan city, wholly under Etruscan influence. During this period we read of palaces and temples and of works of immense magnitude being built for the embellishment of the city. After expelling her kings Rome existed as a republic for five centuries without doing anything that we know of to advance either art or science. There is probably no instance in the history of the world of a capital city living so long, five hundred years, populous and peaceful at home, powerful and prosperous abroad, and at the same time so utterly devoid of any monuments or any magnificence to dignify her existence. After Rome became mistress and the capital of the world, she became the center of all the arts and sciences. A wonderful change now took place, for in the three centuries of the empire more and larger buildings were erected in Rome than ever were erected in a like period in any one city, displaying, however, more wealth and power than taste and refinement. Nevertheless, there is a grandeur of conception and a certain expression of power in all these Roman remains that forces our admiration even in spite of our better judgment. Rome gathered from all former civilizations and bequeathed to all that followed after. In consequence, her architecture becomes particularly instructive, though the lesson we learn is often what to avoid.

In temples the Romans had two forms, the rectangular of the Greeks, and the circular, or Pelasgian. The circular temple, with its dome in stone, as in the Pantheon, became almost a new style in the hands of the Romans. Later, when Constantine transferred the capital of the Roman empire to Constantinople, this form was selected naturally by the Eastern people as more their own than the rectangular. From this circular temple was formed the Byzantine style, while in the Middle Ages the people of the West chose the rectangular, except where there were colonies of eastern people, where we see the domical form in use, so that the nations following after the Romans seem to have selected from the spoils of Rome what particularly belonged to them, and profiting by the advance made under the Roman empire produced, each in his way, a new style.

It is in Rome for the first time that we find architecture applied to all classes of constructions. In Egypt we found only temples and tombs; in Assyria only palaces; in Greece only temples, while in Rome, temples, palaces, tombs, bridges, triumphal arches, columns of victory, baths, amphitheaters, gates, aqueducts, etc., all became architectural objects, and as many of these were unknown before, they from very necessity possessed considerable originality. The great mistake that was made being that the orders were used everywhere, although they were invented solely for the temple, and were but illy adapted to these varied uses. The Romans began after a while to see this, and by the time of Constantine the use of the orders was fast disappearing, and had Rome lasted long enough a true Roman style would eventually have been produced.

An interesting class of Roman buildings are the basilicas or halls of justice. For they afterwards became Christian churches, and even suggested the ruling features of the mediaeval cathedral.

Among the most important Roman constructions are the baths, or great thermic establishments. They were essentially Roman, and were not only for bathing, but also contained rooms for recreation, a court for games, halls for lectures, etc. In the forum, adjoining the Trajan Basilica, I called your attention to the site of the Column of Trajan. From its base to its summit it bears the imprint of Roman genius. (V.-Leduc.) Its square base is covered with low reliefs representing trophies of the arms of conquered nations.

Like a ribbon wound around the shaft, is a sort of continuous frieze, on which is sculptured in the most admirable manner, the story of the first campaign of Trajan. In the center of the shaft, in low relief, a figure of Victory traces on a tablet the record of the deeds of the conqueror. Then begins the story of the second campaign, which is continued to the capital, on which stands the statue of the conqueror. The whole is admirably executed from great blocks of marble. (Viollet-Leduc.)

To understand Roman architecture we must go beneath the surface and penetrate to those things of which they are but the natural expression. (V.-Leduc.) We must, as far as we are able, mix in Roman society, so grand and so solidly established, notwithstanding its errors and abuses; we must enter a Roman house, and learn the tastes and mode of life of a Roman citizen, and witness the harmony that exists between the man and his habitation. Such harmony existed at Rome and among Romans, and should exist here in Chicago in every house that is built, and the architect should be able to give advice, supported by such simple and solid reasons, as to convince a capricious or indecisive client.

The private houses at the close of the Republic all presented an external appearance of uniform simplicity, and all used the same methods of construction and the same material. Although a wealthy Roman may have spent large sums from his private purse to build an aqueduct or a circus for his native city, his private house, externally, appeared little better than his poorer neighbors. He felt it a duty to disguise the splendors of his household from the passer by. The interior, however, was for his family and friends, and where he was willing to spend all he could afford to entertain them. The Romans spent the greater part of their time in public.

In the morning the prominent citizens received their dependents, they formed his suite when he walked abroad, for among the patricians of the republic to be attended by a great number of retainers was a means of obtaining influence in public affairs. Thus he proceeded to the forum and engaged in public occupation; then after attending the baths or the sports he could retire to his home. In the evening the house of the Roman citizen was closed to all but his intimate friends, for whom all the luxury of the interior was reserved.

The apartments of the house were small and opened on courts and interior porticos, rendering them strictly private and free from the prying eye of any from without.

The architecture really suited their wants. The true Roman home, however, was the villa. The wealthy possessed several. Cicero is said to have owned at least a dozen, besides his house in the city. At their villas the Romans could indulge without restraint their tastes for luxury and comfort without fear of the criticisms of the public or their neighbors. Read Pliny's description of his Laurentine villa, in his letter to his friend Gallus.

This letter shows the true practical spirit of the Roman. He says not

a word of decorations, mosaics, marbles, or paintings, but he everywhere insists on the prospects, the aspect of the different apartments, with regard to points of compass, their peculiar arrangement, the coolness of some, the soft temperature of others, the various views he enjoys seaward and landward, the tranquillity of the rooms set apart for study, and the beauty of the gardens. Nor is there a spark of vanity. He and his architect had arranged his country seat according to his habits and tastes, and he was pleased with it. Note, also, that there is not one word about symmetry. The popular ideas on this subject are entirely false. There is no indication of it in any house at Pompeii, nor in writings. On the contrary, there is always a frank acknowledgment of the requirements in each case, indicating common sense and good taste.

The chateau and manor house of the Middle Ages resembled the Roman villa more closely than do the mansions of the last two centuries, for the men who built these manor houses (Viollet-Leduc) first required to be lodged agreeably, wholesomely, and strongly, and were not particular whether one wing was longer or shorter, or higher or lower, than the other. It is always good architecture when the requirements are filled in a straightforward, sensible, well studied manner. However particular the Romans were to give regular, symmetrical, stately plans to their public establishments, they had too much sense to inconvenience themselves with any such restrictions in their domestic architecture. Listen a moment longer to Pliny in describing to Gallus that Laurentine villa he loved so well:

But seventeen miles from Rome, on the shore of the sea, large enough to afford all desirable accommodations without being extensive. First there is a vestibule (atrium), simple but not mean; thence you proceed to a small but pleasant court, shaped like the letter D, surrounded by a portico or gallery, affording a commodious retreat in bad weather. From this second court you enter a third; from which opens the banqueting hall, which extends out over the sea in such a manner that when the African wind blows the base of its walls are gently lapped by the waves. This room is pierced on all sides with doors, or windows as large as doors, so that on the three outer sides you have as many views of the sea, and on the inner side you command a vista of the principal court, with its portico, the little round court, then the vestibule, and beyond, in the distance, the woods and the mountains.

The Romans showed their good judgment in the construction of their houses, as well as in the plans and decoration. The usual building materials were rubble, concrete and brick, the same as we use today when forced to be economical, or when building for a man with the sound, sensible tastes of the Roman. In the finest Roman homes there were such luxuries as a few marble columns and marble wainscotings, but the lintels and roof construction and the ceilings were of wood. Plaster and stucco, well made and painted, covered the walls. The Romans built their public buildings to last for centuries, but for their dwellings they well knew that the domestic changes would require their renewal probably ere fifty years. The remains of ancient villas about Rome and Pompeii are all of simple and economical construction. The Roman house was designed to be cool in summer and warm in winter. He had water everywhere. The accommodations for his servants (who were slaves) were better than servants usually receive in our best houses. In fact, these slaves were often better treated, and more free and happy, and more comfortably provided for, than are the domestics of even the most kind of the wealthy householders of the present day, though we have accounts of abominable cruelties.

A plan of Ancient Rome shows two-thirds of the city occupied by public buildings and gardens. Rome then being the central government of the civilized world, required these great public structures. The population within the city was comparatively small, and mostly crowded together in many-storied houses. Every Roman who could afford it had at least one villa, where he spent most of his time, though public affairs forced many to have their city house.

Nothing at the present day can give any proper idea of Rome and vicinity at the latter part of the Empire. The immense number of public and private buildings of every sort, the palaces, temples, baths, theaters, amphitheaters, monuments, etc., interspersed with gardens and public promenades, and surrounded by walls and citadels, and outside of this for a circle of six or eight miles arose a prodigious quantity of large and small villas, and along the roads many more vast public establishments, temples, tombs, inns, etc., while through the midst of this mingled sea of dwellings, monuments and gardens, stretched long lines of aqueducts, from the mountains to the city, pouring great lakes into the bosom of the metropolis.—(Viollet-Leduc.)

At the close of the empire Rome was nearly deserted, and although wealthy Romans inhabited their villas in Greece and Gaul, in Africa and in Asia, their abandoned villas around the Imperial City were pillaged by the slaves and ruined husbandmen. Even before Constantine, art had abandoned Rome, and the new buildings were erected with material from the old.

The Arch of Constantine was decorated with bas reliefs and statues, taken from the Forum of Trajan.

Art had taken refuge in the east at Byzantium. There, among Greek traditions and Asiatic influences, it developed into an eastern style known as the Byzantine.

Meanwhile the West fell into the hands of the barbarians, and the Roman monuments which covered the soil of Gaul, Italy, and part of Spain were destroyed or ravaged, and a long night of more than Egyptian darkness shut down over Western Europe, and the sparks and embers of civilization, and the arts that remained, were kept alive by the Saracens, under Greek influences and traditions, and by the Greeks in the East, to be kindled in the eleventh century into a flame that in the thirteenth century illuminated Europe with these magnificent cathedrals, like Amiens, Rouen, Reims and Chartres, producing another great art epoch, that for two or three centuries dazzles us with its brilliancy.

ARCHITECT Wm. A. Bell late of York, Nebraska, is now permanently located at Los Angeles, California.

Chicago Foundations.†

BY HARRY LAWRIE, CHICAGO, ILL.

THE intention of this paper is not to give an exhaustive treatise on Chicago foundations, but to bring before you the general principles upon which they ought to be based. Within the memory of the present generation, or about thirty-five years ago, it was no uncommon circumstance to see in the vicinity of State street, down town, a placard, placed in a slough of mud and water, with the ominous words painted thereon: "No bottom here." Such a state of things might have deterred the average mind from attempting any building operations there, but the Chicagoan, nothing daunted, erected structures on a soil as compressible in those days as a sponge; and gradually, by dint of hard labor, both mentally and physically, but amid many vicissitudes inseparable from the art of building, gaining experience at the expense of his pocket and reputation, he has at last succeeded in erecting on the same soil buildings high in character, broad in design, a credit to any nation, and on a scientific basis that is eminently satisfactory.

In order to fully understand the general principles upon which Chicago foundations should be based we must have a distinct and intelligent idea of the nature of the soil underlying the city. On the surface is sand and-made up ground, varying in the depth from eight to twelve feet; and below this is a bed of blue clay, known as "hard-pan," varying in thickness from three to six feet; below this "hard-pan," to a depth of about fifty feet, is a bed of wet clay, of a highly compressible nature, known as "blue muck." The "hard-pan" seems to differ from this "blue muck" only in being partially dried. See Figure 1.*

On this hard-pan the bottom of all foundations should be placed, care being especially taken not to remove or break the original surface; by so doing we at once destroy the homogeneous mass, and reduce it in thickness, hence its carrying capacity.

Before foundations are commenced a sufficient number of borings should be taken over the entire site, to determine the average thickness of the hard-pan, and should any great inequalities exist, care should be taken to strengthen, at these weak points, the footings which come thereon. This clay is more or less compressible, and upon all compressible ground the successful erection of any ordinarily heavy building, such as a large office building, warehouse, theater or public building, involving considerable weight of materials, the following well known and recognized principles should be applied:

1. Resolve the building into isolated piers on the ground or basement floor, and give to each its proper proportion of foundation commensurate with the weight carried; that is to say, the areas of the foundations must be in exact proportion to the load carried thereon.

2. The load carried by the foundations is to be placed centrally thereon, the center of gravity of the pier coinciding with the center of the foundation.

In the first principle mentioned the subdivision into isolated piers may be somewhat difficult, more especially where piers and high walls, such as "party walls" abut, or where vaults are in close proximity to or abutting the main piers of the building. Such cases can only be dealt with upon the principles laid down, and applied to the best of the architect's ability to deal with such points.

Figure 2.* Having resolved our building into isolated piers the second principle is applied. Suppose, as a *reductio ad absurdum*, that the load is not placed centrally on the foundation, the natural result would be that, owing to the compressible nature of the soil, the base would assume an inclined plane, the depression being toward the end where the load was put, and the axis thrust out of its perpendicular line, for it must retain its original angle with the base, and will assume such a position as represented by figure 2, the dotted lines showing original position of foundation and load.

Figure 3.* In figure 3 we will suppose a store front with heavy piers at A and B and a lighter intermediate pier at C, with a continuous footing under the whole, in order "to get all the strength" we can. The inevitable result would be that the heavy piers, A and B, would so depress the compressible soil that the foundations would form a convex curve, as shown by figure 4, while the foundations would rupture at points E, the lintels and beams, if of stone, would crack, the mullion or pier C might bend or be forced out of its perpendicular line and a variety of mishaps might occur, all of which would be injurious to the building. If the footings under piers A, B and C had been isolated and made proportionate to the loads carried, as shown by dotted lines (figure 3), the settlement would have been equal, and no such trouble as above stated would have occurred.

Take another example, in figure 5,* with a continuous footing under the buildings and inverted arches placed between piers A and B to carry intermediate and lighter pier C, these inverted arches being ostensibly for the purpose of spreading the load on the continuous footing. The results are the same as before mentioned, viz.: a greater depression where the heavy piers occur than at the lighter ones, a rupture in the continuous footing, a breaking and cracking of girders and lintels, as in figure 6; but the same remedy can be applied, viz.: an isolated foundation to each pier properly proportioned.

Take another example in figure 7,* where arches are thrown from one pier to another in order to support part of the superstructure. The outward thrust of the arch A will have a tendency to displace the center of gravity of pier B and destroy its verticality.

In all of these examples the direct tendency of the continuous footing is to add something additional to one side of the foundation under the pier, and therefore violate the second principle, causing the center of gravity of the pier to be different from the center of the footing.

A flagrant example of the continuous style of footing is in the Chicago Postoffice, under which is a bed of concrete covering the whole site of the building, figure 8,* the idea being evidently to use it as an equalizer.

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†An essay delivered before the Chicago Architectural Sketch Club, Dec. 21, 1885.

* See diagram on illustrated pages.

Instead of such it has acted in the most direct way as a very destructive element. The heavy outside piers of masonry have a depressing effect upon the outside edges of this mass of concrete, greater than that caused by the interior or lighter piers carrying the floors, etc., the direct result being a spreading of the building toward the top, such as in figure 9, causing cracks in foundations, lintels and stonework generally, humps in floors and a general displacement of levels.

Apart from the danger to the building from this method of continuous footing, the question of economy arises and plays a most important part in the building of today. We have to arrive at a maximum strength at a minimum expenditure. By using the isolated pier principle, not only do we get a perfect foundation, or nearly so, compared with the other, but we do so at a greatly reduced cost, for we effect a saving by dispensing with all unnecessary material.

It is a simple question to determine the exact weight of solid masonry that comes on any given footing, but it is a somewhat difficult problem to lay down hard and fast figures for the weight per square foot of floorage carried by said footing. The load of solid material is a known quantity-since we know the weights of the various materials supported by the foot, ing, but when we begin to make our calculations for weights on floors, we at once deal with a theoretic load, to a certain extent be it observed, for we know the exact weight of the floor construction, but beyond that point the figures are purely theoretical.

The strength of our floors, beams and girders are calculated to sustain say 120 to 130 pounds per square foot. If we were to allow for the whole of this weight on each floor being transmitted to the foundations, it is at once evident that our allowance would be too great, for we suppose every floor would be loaded to the full capacity, an almost impossible circumstance in any ordinary building, the result being that that pier would settle less than those on which solid masonry came, disturbing the floor level and generally injuring the structure by unequal settlement. As a factor of safety for floor load on foundations, an allowance of from five to eighteen pounds per square foot over and above actual weight of floor construction is commonly allowed. The exact amount so used to be determined by the architect according to the style and use of the building.

In treating interior piers or iron columns in a building with heavy outside walls, another point arises, and one which has considerable play on the equal settlement of a building : the clay which, as we have pointed out, being more or less compressible, will, by the weight of the outside walls or piers, be forced up in the interior of the building forming a convex curve, the exact nature and extent of which can only be theorized upon, but this convexity will certainly form an element of danger to the lighter interior piers by thrusting them upward, if we may so express it. This upward tendency will, therefore, require to be counteracted, and that can only be accomplished by reducing the area of the footing, or in other words employing a larger factor for the load per square foot of foundation. This reduction varies in different parts of the city and can only be determined by experience and experiment, experience being the better school. Where interior piers or iron columns support floor loads and nothing else, that allowance will require to be greater, since we have seen that all the floors will in all likelihood never be loaded to their full capacity at one and the same time. In some cases an allowance, that is a deduction, of 12% of the area of foundation is made.

The tendency of all outside walls and piers is to have an outward thrust, owing to the weight of floors upon them, and in order to counteract said thrust, an addition to the outside edge of their footings should be made, as in figure 10.* In actual practice this allowance differs considerably, but as much as 10% additional to the footing has been made, say in a heavy building such as one of eight or ten stories high. This will have a tendency to throw the pier off its center of gravity in an inward direction, but there is no fear of collapse, since we have the strength of the floor beams and girders to counteract any thrust.

It is difficult to determine the exact weight per square foot to be placed on the foundations. In some cases two tons per square foot has shown a depression of from three to seven inches, one-and-three-fourths tons per square foot would be a safe load on ordinary Chicago soil, and would probably give a depression of from two to four inches. The exact factor to be used should be determined, if possible, by the results of the borings through the clay, and if this result cannot be obtained before the building is ready for erection, a safe factor, say 1.60 or 1.75 should be employed.

The materials used in foundations are various. Brickwork ought to be used in foundation piers with great care, selecting the best hard-burnt and well shaped bricks, and build them in cement. Such brickwork will bear from six to eight tons with safety, and in some cases as high as ten tons per square foot. The great trouble with brick footings is their liability to crush under a great load, and unless the footings are so proportioned so as to receive a load of, say six to eight tons per square foot, another and stronger material had better be employed.

Brick in cement will crush at from 450 pounds to 1,000 pounds per square inch, and allowing a factor of safety of six, which is low, would give in tons five to twelve.

Rubble-work, well built and squared at the joints in large stones, forms an excellent footing built in cement; such mason-work will safely sustain a load of from twelve to fifteen tons per square foot.

Dimension stone is an expensive item, and, unless under exceptional circumstances, should only be used for bond courses. The offsets on these foundations should be carefully studied. Those in brickwork should be about three-quarters to one inch per brick for heavy footings.

In rubble-work with courses of about fourteen to eighteen inches high, offsets of from six to ten inches are sufficient, and in dimension stone, say one foot, two inches high, the offset can be twelve inches. Concrete should only be used as an equalizer, and placed at the bottom of foundations. The load which can safely be put upon it is about four to six tons per square foot.

In building footings they are sometimes constructed with a hollow space to allow of the masonry drying out and preventing cracks from unequal drying, but care should be taken to see that the area of the mason work is of the required amount. Footings are sometimes connected by wooden beams, as in figure 11,* but this method of construction should be used with great care, as it has a tendency to displace the center of gravity of the pier, as in figure 12,* and violate the second principle as laid down. In order to get greater projection of footing, or more bearing area, and that projection required to be had in a height that would be too great for ordinary offsets, iron rails or beams are sometimes used. The strength of these beams or rails can be calculated on the basis of a beam supported at one end with a distributed load. With such a mode of construction the rails should be laid on a bed of concrete from twelve to eighteen inches thick, as an equalizer, and covered on top with cement. Such a mode of construction has the advantage of giving greater space in the sub-basement. In ordinary circumstances anchors or tie beams are unnecessary to the stability of piers. The piers should be so designed that they have a distinct and independent strength, and not dependent on each other for lateral support. It may be that tie rods are necessary to brace two parts of a building together, but this should not occur in a new building with independent walls, but may be in a new building adjoining an old one where the walls have to be braced for various reasons, best determined when the case is before us.

Unless under exceptional circumstances, piling in Chicago is an unnecessary and often dangerous method of making a foundation, when we remember that below the blue clay we have about fifty feet of "blue muck," which is incapable of sustaining the piles to any considerable extent. On ordinary ground, away from the river, piling is unnecessary, from the fact that we have shown that foundations can be laid on top of the blue clay that will support the superstructure. If we conclude that piling is necessary, great care must be taken that a hard bottom is reached before the foundation is placed on top of the piles. This can only be got by driving through the clay and blue muck to the hard bottom below, in all a depth of about fifty feet, involving very considerable cost and time in the construction thereof. It is supposed that by piling a given area, greater bearing surface can be got, hence greater stability; in some places this is the case, but not in Chicago, unless we go down to the great depth already stated. By piling a given area and placing the piles as close as convenient, say one foot apart, we at once reduce the bearing surface of the clay by just the area of the piles, and supposing that the piles are driven through the clay and some feet into the blue muck, as in figure 13, we supply in place of the original clay surface a new bearing area equal to the area of the piles, and resting on a highly compressible substance, the result being that when the load is put on, the whole foundation must inevitably sink to the detriment of the building, resulting perhaps in cracks in walls, falling of floors, and other mishaps more or less disastrous.

Where piling is necessary is at the river bank, where water so percolates the soil as to render it highly compressible and spongy, and successful piling can only be got by following closely the conditions mentioned, namely, by driving to the hard bottom to whatever depth that may be.

The Campanile Tower of St. Mark's, Venice, is a notable and most successful example of an isolated pier, being built on a highly compressible soil. We have it in the *American Architect* of August 29, by Mr. Blackall, who examined the foundation, "that the total weight of the tower, in round numbers, is 13,000 tons, whence the distributed load on the piling is somewhat over six tons per square foot, a load which would cause modern engineers to hesitate a long time before putting upon piles which are simply driven into the clay. The foundations have, however, stood the test of several centuries without yielding an inch, and one of the most valuable results of the investigation has been to fix a maximum of load which can safely be borne under such conditions. It is an interesting question how much the piles really support, for, as previously explained, they have no solid bearing, and according to the manner in which piles are usually driven in Venice could not be relied upon for such a load as six tons per square foot."

This is a very interesting question, but it appears evident that the piles must have been driven to the hard bottom, the exact depth we have no means of determining. The principles which hold good in one place hold good in another where the soils of both are compressible, and if in Chicago we have to drive to the hard bottom, so in Venice, to make a successful job have they to do likewise.

Such then is a brief outline of what has to be done with foundations in Chicago. There are many other points not brought forward in this paper which are important enough to deserve a place of mention, but, as before stated, this paper is not an exhaustive treatise; but enough may have been said to spur our minds to a more active and intelligent understanding of the problems in foundations that may come within our daily practice, and the additional knowledge gained tonight will, I hope, be useful to all of us, and make us sympathize with those who have not been altogether successful in their undertakings as far as foundations and equal settlements are concerned, and let us always be able to say, although not uncharitably, that if any failure should occur in this connection it was the "other fellow" who did it.

MINNEAPOLIS is to establish an industrial exposition, the first to be opened to the public August 23, 1886. The fact of this exposition opening before the close of the summer season at a time when the climate of Minnesota is most attractive, and her summer resorts and her myriad of lakes give the most pleasure to the tourist, would argue well for its success, while the spirit with which the people of the Northwest have already taken hold of the enterprise, would ensure a full representation of all the industrial products of that region, drawing also from the manufacturers of the entire West for exhibits. The officers are Hon. W. D. Washburn, president; S. C. Gale, vice-president; H. G. Harrison, treasurer; W. G. Byron, secretary; and a directory of twenty-five of the best known capitalists of Minneapolis.

*See diagram on illustrated pages.

*See diagram on illustrated pages.

Architectural Brasswork.

IN reviewing the history of architectural brass work the *Builders' Weekly Reporter* of London, Eng., says: It is a very singular fact in economic history that metallic alloys were in common use at a very early period. It seems, for instance, very singular at first sight that the compound metal bronze should have been widely employed for the manufacture of tools and weapons before the employment of iron or steel. Yet such was indubitably the case. Of course, when once the principle of producing a compound metal was discovered (probably by accident), it was much easier to smelt the ores of copper and tin, and subsequently amalgamate the metals into an alloy, than it was to smelt the far more intractible ores of iron, which required a powerful blast to reduce them. Hence bronze was one of the earliest used of the metals, and subsequently its employment was of the widest range.

Doubtless the early Phenicians, the inhabitants of the sea-bound cities of Tyre and Sidon, were the earliest bronze workers during the historic period. That singular people — the Etruscans of Northern Italy — were at last equally celebrated. Bronze weapons and tools were used by the Egyptians, the Assyrians, the Trojans, the Greeks, the Romans, the Carthaginians, in fact over the whole of the ancient world.

One very singular architectural use of this metal was that large plaques or panels were cast in it, and the walls of palaces and temples plated therewith.

But common as was bronze, the early world does not appear to have had any knowledge of the compound metal which we term "brass." This, doubtless, resulted from the fact that zinc was entirely, or almost entirely, unknown. If the old world were familiar with spelter or calamine, they were clearly unable to reduce the ores. Brass is so much more brilliant a metal than bronze that the simple people of antiquity would doubtless have adopted it with avidity had they been acquainted with it. The later Romans knew of it and used it, most certainly, for coins and works of art are extant of brass.

All through the Middle Ages brass was freely used, and at the Renaissance especially it rose to its meridian of popularity. Its glare and polish satisfied the somewhat meretricious mind of that strange period, and it was employed lavishly. André Boule, by his use of brass in combination with rare woods for the ornamentation of furniture in the style that we name "buhl-work," gave a fresh impetus to the use of brass. Since then brass has always maintained its supremacy as the most suitable metal for all the small architectural fittings of a dwelling, from a mansion to a cottage.

In the houses of our ancestors the metal used was mainly iron, and the articles constructed of it were rude and heavy. The most casual inspection of ancient locks, keys, hinges, bolts, and bars will show this. It is hardly an exaggeration to say that in those days a man had to carry his door latch-key about in a wheel-barrow. Iron, too, is the metal that of all others oxidizes most readily, and although this might be prevented by the use of oil or tar, the use of these would be inconvenient in internal fittings. Brass, on the other hand, does not easily become coated with verdigris, and even tarnish can be avoided by the use of lacquers. Most of the builder's brasswork produced in this country is manufactured at Birmingham, where several large establishments are devoted to it, and to the production of other kinds of brasswork. Of these we may mention Messrs. John Hardman & Co., of Newhall Hill, and Messrs. R. W. Winfield & Co., of the Cambridge-street Works, and the Smethwick Works.

As some people have not a very clear conception of what is meant by the term "brass," we may define it as an alloy of copper and spelter — that is to say, the raw metal of which zinc is the manufactured product. Of old the "cementation," as it was called, of copper and zinc, or spelter in the crude form of calamine stone, was esteemed a weighty business, and engaged the particular attention, amongst other Birmingham notables, of the acute Matthew Boulton, well known as the partner of James Watts, at Soho. This gentleman appears to have had a great horror of the interference of shareholders in a company projected for making brass at Birmingham. "If," he wrote, "the works are erected at Birmingham, the work will be constantly deranged by the interference of a hundred blockheads."

Of the builder's brasswork, to which we have referred, the quantity made at Birmingham is enormous. Brass bedsteads also form a very important item of manufacture there, and brass gasfittings go all over the globe from Birmingham. Brass is first cast in small bars or ingots, termed technically, "strips," and for sheet brass these are passed between heavy rollers, until reduced to the thinness desired. Many kinds of work, as, for example, door handles or knobs, are of course molded and cast much as in ironfounding. The designs produced in the brasswork of today are an immense advance upon the monstrosities perpetrated in the early part of the century. When Augustus Welby Pugin was introduced to John Hardman, of Birmingham, in 1838, the art of metal working seemed, as an art, absolutely dead in this country. Pugin brought antiquarian knowledge, inventive faculty, and supreme good taste to his designs, whether architectural or general. He raised our manufacturing art from the degradation of its low estate, and gave it an impetus which still exerts its power in an onward and upward direction.

One of the most satisfactory of the recent revivals of artistic brasswork is the resuscitation of what is termed, "repoussé" work, a branch of art in which many of the ancient artists excelled. Amongst these may be honorably named Benvenuto Cellini, the great Florentine armourer and goldsmith. The embosser or worker in repoussé proceeds on the same principle as the engraver in intaglio save that he hammers and drives instead of cutting into his plate, which is fixed against a backing of pitch, into which he forces the ductile metal, making, as he goes on with his work, a sunken pattern in such wise that when the pitch is melted off the reverse side shall appear in relief. Whether the material be silver or brass, the term "repoussé" exactly describes the method by which it is produced, and by which the old workers in iron made the wondrous rapier hilts and other defensive armour with which collectors are familiar.

Pargetting.

THE words "pargetting," "pergetting," "pergening," and parge-work mean fundamentally plasterwork. The term, however, according to the *Builders Weekly Reporter* of London, England, appears formerly to have been used in several senses, sometimes for plain plastering on walls, but usually for such as was made ornamental. This was effected by moldings, foliage, figures, and other enrichments, applied in relief, and by various ornaments and patterns sunk in the surface of the work, or formed on it in a smoother material than the rest. Timber houses of the time of Queen Elizabeth are often to be found with the exterior ornamented with pargetting.

The styles of pargetting vary almost endlessly. They range from the very simplest patterns which the rudest provincial bricklayer is able to produce without appliances to complicated and elaborate patterns of an artistic character, which are both difficult to accomplish, and need special tools made for them. The most simple of all patterns is that where the wet plaster is marked out into rectangular or parallelogramatic panels by the aid of the straight-edge, and the interior of the panel is then gone over with the trowel, jobbing the point of that tool in the moist plaster, so as to leave a small depression. What in a piece of carpenter's work would be called the stiles and rails are left untouched. When even this simple pattern is well done the work is good.

All kinds of right-lined figures are easily produced by the aid of the straight-edge and the mason's square. Circles and curves are more difficult, because it is not always easy to find a center from which to stroke them. For this purpose a long and sharp-pointed nail should be driven into the laths where they cross a post or timber, so as to have a firm centre. A piece of string can be tied to this, and the other looped around a piece of pointed steel or iron, when any required curve can be drawn by the latter.

There can be but little doubt that the ancient pargetters produced their more elaborate patterns by using small stamps cut out of hard wood and working them all over the moist surface. Other patterns appear to have been produced on the soft surface by the application of small tools in a manner analogous to that pursued in wood-carving. Doubtless ornaments in high relief could be produced by the use of compo moldings, such as are used by the internal plasterers for ceiling. If such were pressed in the plaster they would adhere when dry; but they would be liable to the objection that when weathered their yellow brown hue would not harmonize with the glossed surface.

No extensive revival of pargetting, however, is to be expected. Doubtless the old lath-and-plaster form of construction is doomed to perish before brickwork. It is, perhaps, a pity, for this kind of house is cheap, durable and warmer than a brick one. It is also, strange to say, often more weather-tight. No shower, however violent, can ever saturate a plaster wall, because there is an intervening space between the external and internal surfaces. But if a wall made of soft brick, say the common deep red brick made from the clay of the eastern counties, is exposed for any considerable time to a heavy, oblique shower, the porous fictiles become saturated almost as easy as a sponge would be.

There are still many good examples of ancient ornamental pargetting extant, of course always in old houses. In the market-place at Newark is a wooden house, with small figures and canopies over them in plaster work between the timbers, some of earlier dates. Some good examples may be found in the ancient town of Oxford. Among these may be instanced part of the front of Bishop King's house, covered with an elaborate and effective pattern, also a beautiful shapened panel in the High street, and a panel with much of a French character in the Corn Market.

Association Notes.

MEETINGS.

WESTERN ASSOCIATION OF ARCHITECTS.—Convention will be held November 17, 1886, at Chicago.

ILLINOIS STATE ASSOCIATION OF ARCHITECTS meets the first Thursday of every month, at 15 East Washington street, Chicago. Annual meeting first Thursday in October, 1886.

MISSOURI STATE ASSOCIATION OF ARCHITECTS meets at Kansas City on the second Tuesday in January, 1886.

KANSAS CITY SOCIETY OF ARCHITECTS meets Saturday afternoon of each week. Annual meeting second Saturday in April, 1886.

The ARCHITECTURAL ASSOCIATION OF IOWA meets second Wednesday of January, 1886.

The ARCHITECTURAL ASSOCIATION OF MINNESOTA meets every other Tuesday at Minneapolis and St. Paul alternately. Annual meeting January 5, 1886.

The ARCHITECTURAL SKETCH CLUB, of Chicago, meets every alternate Monday, Builders & Traders' Exchange.

The WESTERN SOCIETY OF ENGINEERS meets the first and third Tuesdays of each month at 4 o'clock P.M., at 15 East Washington street, Chicago.

The MASTER PLUMBERS' SOCIETY, of Chicago, meets first and third Wednesdays of the month, 7:30 P.M., at 15 East Washington street.

THE Architects of the State of Kansas will meet January 25, at the Windsor Hotel, Topeka, to form a state association of architects.

ILLINOIS STATE ARCHITECTURAL ASSOCIATION.

The first meeting in 1886 was called to order January 6, D. H. Burnham, president, in the chair. The meeting was attended by about thirty architects, honorary members Cregier and Artingstall, and visitors W. C. Grant and O. H. Horton, prominent lawyers, who were invited to speak upon the legal phases of architectural practice in Illinois.

After the usual lunch had been served and disposed of, Mr. Burnham said an invitation was extended by the Executive Committee to Messrs. Grant and Horton, who were present, and would present to the association the legal aspects of the profession, and would be glad to hear any questions that might occur to the members to ask.

Mr. W. C. Grant addressed the chair and the members, and said he did not come prepared to make a formal speech, but would cheerfully answer such questions as might arise that touched upon architectural practice. This is a great field, and frequently the relations existing between owner, contractor and architect lead to litigation. Some years ago I was asked to sign a petition by the Builders' and Traders Exchange to change the form of contract for one that provided that the architect should not be the arbitrator between contractor and owner. I did not agree to this, as I found that the only security the owners had was in this, otherwise they were very much at the mercy of dishonest contractors, and am glad that the change has not been made, as the owner has no knowledge, and the architect is capable of judging if work is perfect. If I can congratulate the architects upon one thing, it is upon the improvement made in construction in the last ten years, as we now have buildings not surpassed in the world. If the judgment of the architect should be set aside it would be a great injury, and the owners would have to protect themselves otherwise. In almost every case where difficulty arises between the architect and contractor, the contractor has been obliged by the courts to settle. The law in Illinois is well settled upon this point, and where difficulty arises the decision of the architect is final, and where cases have been decided in favor of contractors the higher courts have reversed the decision. In regard to the point where a penalty is made in contract for non-fulfillment of contract in specified time, there is no law definitely established, except that the owner is entitled to an amount within the sum specified as the rental value might be for the time of delay. In regard to further damages, such as might arise from loss of a rental for a term of years through this delay, it was unsettled, but probably the contract damages were all that could be recovered, as a case recently decided by the Supreme court only allowed this. It was a good plan to leave the clause in contracts, for the moral effect, if for nothing more.

The chairman returned thanks to Mr. Grant for his remarks, which are only given in extract, and introduced Mr. O. H. Horton, who said: The responsibility of the architect and owner and the contractor's responsibility after receiving final certificate had frequently come before the federal court. Like Mr. Grant, he thought the Chicago man had a natural pride in rebuilt Chicago, and its character was in the greatest measure owing to the Architectural profession. It is to be regretted that so few questions of law touching on these points have been definitely settled, and until this is done lawyers will differ from principle. He had an impression that the measure of damages should follow the amount stated in contract, though was not aware that the question had been settled either in the supreme or federal courts. He was of the opinion that architect's certificate settled the question and was absolute, subject of course to fraud, accident or mistake, and even in cases where it would seem on the outside that there was fraud between the architect and contractor the certificate was upheld. In cases where no penalty is specified the contractor is also held liable by the courts. In regard to cases where tenants suffer from defects, especially from bad sanitary arrangement, there has been no decision affecting the contractor, though the owner may be liable. The architect was in no way liable except where collusion between him and contractor; but in cases where the architect's plans were proven defective after he had represented himself as an expert he is liable, as the owner relies on him and he is paid for his experience.

It seemed to the speaker extremely necessary that architects should pass some kind of examination before being permitted to practice.

In a case where the owner pays part of a contract without the architect's certificate it only annuls that part of the contract.

In the case of sinking foundations below those adjoining, it was stated that after giving fair notice the foundations can be carried to any reasonable depth, as no man owns a right on his neighbors' property without paying for it.

A question in lien troubles is where the architect is asked to give final certificate. He is bound to do so whether the owner objects or not if the conditions as regards workmanship are fulfilled, as he is the arbitrator and it is in his hands to decide amicably a great many of the difficulties which come up between owner and contractor. The architect can do this in a large measure by refusing to do business with contractors known to be dishonest. Mr. Horton concluded his remarks by saying that the character of a city could be told by its architecture, and the meeting adjourned.

ARCHITECTURAL ASSOCIATION OF MINNESOTA.

The fifth annual meeting of the Architectural Association of Minnesota was called to order by President Hodgson at the Hotel Ryan, St. Paul, at 4 P.M., on Tuesday, January 5, 1885.

The following members were present: Fellows Bassford, Corser, Goodwin, I. Hodgson, Millard, Whitney, Treherne, Castner, Struck, Joralemon, Kelley, Joy; Associate Waters, and Honorary Members Baldwin, Bruce and Pardee.

The minutes of the regular monthly meeting held December 1 were read and approved.

The Board of Management submitted the following report:

Fellows and Associates of the Architectural Association of Minnesota:

Your Board of Management, elected at the last annual meeting held in Minneapolis on the 6th day of January, 1886, beg to report as follows:

At the last annual meeting the association approved and adopted the revised schedule of professional charges previously approved and adopted by the American Institute of Architects and the Western Association of Architects. The board has, however, had no means of ascertaining to what extent the schedule has been lived up to by the members, but, from rumors afloat, it fears that many fellows have disregarded it entirely in their dealings with clients.

Two prizes have been awarded in the competitions established by the Committee on Library, Publication and Education: one to Junior John H. Jacobsen and one to Associate Chas. F. Batchelder.

The board has decided that a charge of $5 per plate shall be required of all members taking part in the annual banquet this evening.

At the special meeting held December 22 the matter of charges of unprofessional conduct against a fellow of the association was brought up, but no action or minutes taken. An adjournment was taken to December 28, at Minneapolis, at which time testimony was taken, but the fellow did not appear. At this adjourned meeting an adjournment was made to the office of D. W. Millard on January 5, at 2 P.M., at which time the fellow did not appear, and no action was taken. We hereby refer the testimony already taken to our successors in office. We recommend that our successors take action at their earliest opportunity.

One of our fellows, in tendering his resignation recently, made certain strictures upon the association. His resignation has accordingly been laid upon the table until he specifies and explains the causes for his action.

We have examined the treasurer's books, finding them correct, and a balance on hand amounting to $56.35.

This board congratulates the association upon the standing it has attained among kindred bodies, and trusts that no future actions will tend toward the injury of its present reputation.

Respectfully submitted, January 5, 1886.

I. HODGSON, President,
D. W. MILLARD, Vice-president,
F. G. CORSER, Treasurer,
H. SACKVILLE TREHERNE, Sec.,
GEO. M. GOODWIN, Fellow,
E. P. BASSFORD, Fellow,
W. C. WHITNEY, Fellow.
Board of Management.

The report was adopted as read.

The treasurer reported as follows:

Cash on hand January 6, 1885		$ 33.10
Received from fees, assessments, etc		135.00
		$168.10
Paid:		
Banquet, January 6, 1885	$79.00	
Printing	19.75	
Prizes, $10—$3	7.00	
Prizes, $5—$3	2.00	
Treasurer's postage	1.00	
Balance on hand January 5, 1886	59.35	
		$168.10

The treasurer's report was adopted.

The secretary read the following report:

Mr. President, Fellows and Associates:

The first item that the secretary of an association should report upon at the annual meeting is the membership of the body. At our last annual meeting there were 42 names upon our rolls; there are now 68, making a net gain of 26 members. I use the word net, since we have lost two members by non-attendance and one by resignation. In the matter of lapsing by non-attendance, I would state that as soon as the record of a member's attendance began to show any danger of his forfeiting his membership by non-attendance, I was careful to send him a notice calling his attention to the by-laws and stating how many meetings there were by attending which his name would be retained upon the roll. I am sorry to have to report how few juniors are on our rolls. I cannot think that fellows have explained to their assistants the advantages to be derived from membership in the association. No junior has taken advantage of the secretary's record of draughtsmen out of work—I trust on account of their being in constant employment.

In March, 1885, I published, under the authority of the Committee on Library, Publication and Education, the "Transactions of the Architectural Association of Minnesota" for 1884, and distributed them freely among the profession in the Northwest, and among architectural journals. This compilation included the constitution, by-laws, membership, officers, schedule of charges, minutes of all meetings and the papers read before the association. As the editing of the work consumed considerable of my time, Mr. E. P. Bassford, of St. Paul, introduced a resolution at the special meeting held on May 19, "that the members of this association raise a sum of at least $50 among themselves, to which he would add $50, the whole to be given to the secretary as a testimonial of esteem and thanks for his labor in compiling the volume of 'transactions' for 1884." This resolution was passed, and two committees (one for St. Paul and one for Minneapolis) were nominated by the president to collect the testimonial. On the 15th June Mr. Bassford handed me his check for $50. On the 8th September the St. Paul committee handed in $18, and $7 again on the 3d November; the president personally gave me $5 as his donation in October. The Minneapolis committee has never reported. The matter is a somewhat delicate one for me to speak about; but inasmuch as the honor was unsolicited, and was unexpectedly placed upon me by the association, I cannot but draw my own inferences as to the extent my work for the benefit of the association has been appreciated.

As the secretary of the association is also librarian, I have endeavored to build up a library, and to that end introduced a resolution in November, 1884, that each member donate one volume to form a nucleus.

The resolution was unanimously adopted, yet to this day no member has handed in his donation. Finding that I could not rely upon the members to form the embryo state library, I proposed to the association at the February meeting to form an exhibit of building materials, and from the rent charged for exhibiting space to derive a revenue which could be devoted to the accumulation of a library. The association thought the idea a good one, but not to the extent of guaranteeing the first month's rent of the room. As I did not think it just that I should do all the work, and at the same time be responsible for the expenses, I allowed the scheme to fall through. For several months I allowed the matter to stand, but have recently prepared and printed a number of circulars to

publishers offering to personally review the works they issue, copies of which they donate to the library, and publish the reviews in the "transactions;" but the idea came to me so late in the season that I have concluded to allow the matter to stand until after this meeting, and let my successor take up the work if he feels so disposed.

In February last the *Northwestern Improvement Record*, now the *Northwestern Architect*, was constituted the official organ of the association. I may state *en passant* that the Architectural Association of Minnesota is the only state association that has not made the INLAND ARCHITECT of Chicago its official organ.

In March Mr. M. H. Crittenden, of Minneapolis, presented to the association a large hammered copper plaque, the design being an enlargement of the cover of the volume of "Transactions." This plaque is now in the possession of our president.

The *Pioneer Press* in May published an article, in the course of which there appeared several statements very derogatory to the profession in St. Paul, that were credited to Honorary Member Johnson, building inspector, of this city. A special meeting was called, at which Mr. Johnson denied the statements as published, and told the association what he had actually said. The association acquitted him of blame, but required him to correct the statements which appeared. This he did, his letter appearing in the columns of the *Pioneer Press* on Sunday, May 24.

At the regular monthly meeting held in September, Mr. W. H. Farnham, proprietor of the northwestern permanent exhibit, tendered the use of a meeting room in Minneapolis to the association, which offer was accepted, and from that date our Minneapolis meetings have been held there.

Throughout the past year several important matters have been brought up before the association, some of which, I regret to say, have not had the attention given to them that they deserved. We may review these matters in the order in which they have been presented.

Building Inspector Johnson called the attention of the association, at the special meeting held on January 13, 1885, to the last paragraph of Section 41 of the St. Paul building ordinance, in which the use of scantling partitions as supports of any floor or roof are prohibited, except in dwelling-houses, and asked the association to give an opinion of the clause. It was recommended that the clause be allowed to stand as it was.

At the September meeting the association adopted a new scale of measurement being one by feet and decimal parts of a foot, in place of one by feet and inches, the new scale to go into effect at the first of this year. A representative of Mr. E. G. Soltman, of New York, was in town shortly after the adoption of this scale, and had a number made and sent me a few for those members who had not ordered one. Of the consignment sent I have disposed of one only. Members needing any can, therefore, secure them of me as I shall hold them for a short time longer.

A very important question which was brought up and discussed at several meetings, but on which no decision was reached, was the matter of the ownership of plans. Quite a spirited discussion took place at the March meeting, when a resolution was passed, calling upon members to submit their opinions in writing at the next meeting. Only one member fulfilled the requirements of the resolution.

Before the convening of the annual meeting of the Western Association of Architects in November, upward of twenty members of this association handed in their names to me as intending to go to St. Louis. President Hodgson, Vice-president Millard, Fellow Struck, Junior, Bergholtz and Honorary Member Baldwin were the only ones who attended the convention. Minnesota, although she had the oldest state association, was the most poorly represented.

Of the important and interesting matters brought to the attention of the association, several were referred to committees. The question of special trap ventilation and fresh air inlets into drain pipes was one of these. In January the committee having the matter in charge reported at length, which they summarized as follows:

"Special ventilation of traps is of only temporary value. Systems of plumbing can be so arranged and proportioned as to do away with such special ventilation by comparatively simple precautions and without committing ourselves to any man's patent right. The committee recommended "practitioners to avoid closets discharging a large reservoir of water into the soil pipe and to use instead the simpler forms, such as the short hoppers and the wash-out class. To avoid slop sinks with large wastes. To confine the length of laterals to a safe limit and to enter each waste separately into the soil pipe." On the question of fresh air inlets into drain pipes and the best means of ventilating these pipes, in view of the severity of our winters, the committee reported in December, that they were generally of the opinion that fresh air inlets are in general a good thing, but would advise that the size of the inlet be reduced to two inches in place of four inches, as required by the building ordinance of St. Paul.

At the special meeting, held January 13, 1885, a committee was appointed to draw up a bill to be presented to the state legislature, regulating the practice of architecture in the state. The committee reported with a draft of a bill on February 3, which draft was referred back to them for correction. It was again presented and adopted at a special meeting held February 6. The bill was introduced in the house by Representative Drake of St. Paul, but the Minnesota legislature fought shy of the measure and it was tabled.

On the same day that the committee was appointed to draft a bill, regulating the practice of architecture, another committee was appointed to draft a bill, regulating fire-escapes and exits on all business buildings, schools, factories and like structures within the state. This committee reported with a draft of a bill on February 3, and the report was laid on the table and not considered until too late for action in the legislature.

At the regular meeting in May a communication from the Boston Chapter of the American Institute of Architects, with suggestions in regard to the bill introduced into the national congress by Mr. Stockslager, was referred to a committee, which committee has failed to report thus far.

The most unsatisfactory action of the association during the year was that in reference to the system of soliciting work from clients and the preparation of gratuitous sketches. At the May meeting the subject was hotly discussed and a committee of eight fellows was appointed to determine the true meaning of the term "sketches" and to formulate a scheme of professional conduct and charges in the matter of private competition. When called upon for their report, on September 8, the committee asked for more time. On October 6 they reported no action and were discharged, and a new committee appointed. This second committee reported at the December meeting, that after several meetings they had concluded that anything that shows the character of a building should be considered a "sketch," whether it be executed in pencil, ink or color. They further reported, that the matter of professional conduct with reference to competition had been left open, since they thought the matter would be more thoroughly and better discussed at the St. Louis convention.

I have made my report thus full, as I consider the report of the secretary should be a general review of the work done by the association during the past year, and as his successive reports should form the history of the institution. I trust the association will be as successful in the future as in the past. Respectfully submitted January 5, 1886.

H. SACKVILLE TREHERNE, *Secretary.*

The secretary's report was adopted as read. The Committee on Library, Publication and Education reported as follows:

Fellows and Associates of the Architectural Association of Minnesota:

Your Committee on Library, Publication and Education beg to report that our library is not in a plethoric condition. Nothing has come from the resolution passed at the November meeting in 1884, inviting donations of books.

Early in the year the secretary issued the "Transactions of the Architectural Association of Minnesota" for 1884, being the first publication of the society. This work has been generally distributed among the profession in the Northwest and among the architectural journals of the country.

Two competitions have formed the series of 1885. The first was for an official seal of the association, and was closed March 3 with five competitive drawings. The prizes were awarded to Junior John H. Jacobsen, of St. Paul, and Associate Chas. F. Batchelder, of St. Paul. The subject for the second competition was a staircase hall of a $15,000 residence, and the drawings were all to be handed in to the secretary by October 6. No drawings were submitted. Respectfully submitted, January 5, 1886.

I. HODGSON,
D. W. MILLARD,
F. G. CORSER,
H. SACKVILLE TREHERNE,
Committee.

Mr. Goodwin moved that the Committee on Membership be given further time to report upon the names referred to them at the last meeting. Carried.

Mr. Millard moved that the first ballot for president be informal. Carried.

The election of officers followed with the following result:

For President—Informal ballot: Millard, 8; Bassford, 2; Corser, 1: Hodgson, 1. Formal ballot: Millard, 11; Bassford, 1. Mr. D. W. Millard, of St. Paul was declared duly elected president. Mr. Bassford moved that the vote be made unanimous. Carried.

For Vice-President—Whitney, 6; Corser, 2; Kelley, 1; Bassford, 1; Goodwin, 1; Gauger, 1; and Mr. W. C. Whitney, of Minneapolis, was declared duly elected. Mr. Corser moved that the vote be made unanimous. Carried.

For Treasurer—First ballot: Bassford, 2; Gauger, 5; Corser, 5. Second ballot: Bassford, 2; Gauger, 6; Corser, 4. Third ballot: Corser, 3; Gauger, 2; Bassford, 7; and Mr. E. P. Bassford, of St. Paul, was declared duly elected. Mr. Treherne moved the vote be made unanimous. Carried.

For Secretary—Kelley, 8; Treherne, 3; Gauger, 1; and Mr. Irving W. Kelley, of Minneapolis, was declared duly elected. Mr. Millard moved that the vote be made unanimous. Carried.

For the other four members of the Board of Management the first ballot gave the following result: Goodwin, 10; Corser, 8; Gauger, 10; Stevens, 4; Bassford, 2; I. Hodgson, 3; Treherne, 1; Millard, 1; Stem, 5; Hayes, 1; E. J. Hodgson, 2; Long, 1. Messrs. G. M. Goodwin, and F. G. Corser, of Minneapolis, and A. F. Gauger, of St. Paul, were declared duly elected.

The second ballot resulted as follows: Gauger, 1; Stevens, 4; I. Hodgson, 1; Stem, 6.

The third ballot resulted as follows: Stevens, 2; Stem, 9; Castner, 1; and Mr. A. H. Stem was declared duly elected. Mr. Treherne moved that the vote be made unanimous. Carried.

Mr. Millard moved that the Committee on Library, Publication and Education which is to be appointed by the Board of Management be and hereby are, instructed to supervise the matter proposed to be published by Mr. Treherne, in so far as said matter relates to the proceedings of this association or papers read before it. Carried.

Mr. Goodwin moved that a vote of thanks be tendered to Mr. Treherne for the manner in which he has conducted the business of this association during the two terms he has filled the office of secretary. Carried.

Mr. Treherne returned thanks for the honor. Mr. Bassford moved that a vote of thanks be tendered to the retiring president for the able manner in which he has fulfilled his duties during the past two years. Carried.

Mr. Hodgson appropriately returned thanks for the honor conferred. A recess was then taken for the new Board of Management to elect the standing committees.

Order being again called, the Board of Management reported having elected the following committees:

Committee on Library, Publication and Education—I. Hodgson, Stem, Taylor and the secretary.

Committee on Meetings and Entertainments—Stem, Joralemon, the president and vice-president.

Committee on Membership—Corser, Bassford, the president, vice-president and secretary.

The meeting then adjourned.

BUILDERS AND TRADERS' EXCHANGE.

About one hundred representative building material dealers gathered in the Builders and Traders' Exchange rooms in answer to the following card of invitation:

BUILDING MATERIAL DEALERS' PROTECTIVE ASSOCIATION.

CHICAGO, January 4, 1886.

The preliminary meeting for the organization of a Protective Association among the Building Material Dealers of Chicago, will be held at the Builders and Traders' Exchange, on Thursday, January 7, at two o'clock P.M., at which time you are respectfully invited to be present. Yours, F. C. SCHOENTHALER.

The meeting was called to order by Mr. Schoenthaler, who spoke as follows:

The object for which this meeting is called, is for the organization of a protective association among the building material dealers of Chicago. Similar associations have been formed in the city, being confined to certain interests, such as sash, door and blind manufacturers, North side brick manufacturers, stone dealers, etc., and while they benefit certain interests the general trade is not benefited. By the formation of an association, taking in all lines and the coöperation of all, the protection will necessarily be absolute. The necessity of a general protective association is becoming more and more apparent, and no doubt there are many dealers who would not have suffered so severely had such an association been formed years ago. I may state that the Chicago lumbermen who supply consumers and dealers in lumber throughout the Northwest support an institution known as the Lumber Mercantile Association, and I can safely say that there are fewer bad debts made by the lumbermen of the city than among any other interest. There is no reason why the dealers should not cöoperate with each other, not only for their good, but for the good of the more responsible and larger consumers. You are all aware that the margins on contracts are very close, caused mainly by increased competition, therefore the risk in selling certain contractors is greater. A number of the dealers are carrying consumers who make one contract pay for another, and at the end of the season are called on to carry them until the following spring, and in a great many cases lose considerable in order to effect a settlement. Then, again, the trade is suffering from a class who pay cash for two or three orders, and by this time having established a certain confidence, ask for credit, and from that time on the dealer is getting in deeper and deeper. The climax arrives, and they begin to trade elsewhere, putting the dealer to considerable expense and trouble in trying to collect. Such consumers have everything to gain and nothing to lose, and it is this class you want to protect yourself against. Such a state of affairs as I have described is brought about by certain dealers being over anxious to dispose of their goods, the question of pay being a secondary consideration. On the contrary, if a certain amount of discretion was used and sales confined to more responsible consumers, losses would be less frequent and just as much material sold. Heretofore the trade has had no system or way of guarding against the wolves of the trade, or becoming posted on what was transpiring, and now that you are about to organize, it remains for you to say what course you will pursue in the future.

The names of seventy-five firms who have signed the following paper were read:

BUILDING MATERIAL DEALERS' PROTECTIVE ASSOCIATION OF CHICAGO.

We, the undersigned dealers in building material, do hereby agree to attend a meeting, to be held at the Builders and Traders' Exchange, for the purpose of organizing an *association affording protection* from the *irresponsible consumers*, from whom the trade have been suffering more or less for years.

Mr. Chas. Kimball was made temporary chairman, and Mr. F. C. Schoenthaler temporary secretary.

After some discussion as to what the association should be, Mr. Wm. E. Hinchcliff moved that a committee of five be appointed by the chair to formulate a plan of operation. Mr. D. V. Purington seconded the motion, and the following committee was appointed: Wm. E. Hinchcliff, D. V. Purington, Wm. E. Frost, J. Henne and B. Moore. The meeting then adjourned to meet at the same place at 2 P.M. on Thursday, January 21, when the committee are charged to report.

CHICAGO ARCHITECTURAL SKETCH CLUB.

At the meeting, December 19, there were thirty members present, President Lawrie in the chair.

The report of the treasurer, R. C. McLean, for 1885 was read, showing a receipt of $102.50 and expenditure of $52.81, leaving a balance in the treasury of $49.69. Due in initiation fees, $40.00. Due in dues, $57.00. The report was approved by the auditing committee and accepted. The business of the session being finished, First Vice-President I. K. Pond took the chair, and Harry Lawrie read an interesting paper on Chicago foundations, which is given with diagrams elsewhere. After the reading of this paper and a brief discussion, a vote of thanks was passed to Mr. Lawrie, and the meeting adjourned.

RHODE ISLAND CHAPTER, A. I. A.

The Rhode Island Chapter, A. I. A., holds its meetings on the second Monday of each month at six o'clock P.M., in a private parlor at the Narragansett Hotel. The following is a list of subjects arranged by the entertainment committee and adopted by the chapter for consideration at its meetings during the season of 1885-1886.

The subjects to be considered in the following order, unless other notice is given by the secretary:

No. 1. Woods — kinds, treatment, use, etc. Subject for sketches: to be announced at meeting.

No. 2. Consideration of different forms of classic Renaissance architecture in the different countries. Subject for sketches: Renaissance mantel piece.

No. 3. Foundations — party walls and laws in relation thereto. Subject for sketches: Small railroad station (plans).

No. 4. Color and decoration. Subject for sketches: A frieze.

No. 5. Treatment of grounds, fencing, drainage, grading, etc. Subject for sketches: Gateway to fine grounds.

No. 6. Office practice and the training of students. Subject for sketches: Doorway to an architect's office.

No. 7. Building materials. Subject for sketches: A small summer house commanding fine view.

It is proposed that at each meeting some member (previously appointed by the president) is to open the subject for discussion, and supplement his remarks by such drawings, models, photographs or other material as may be collected for the purpose. The entertainment committee will render assistance in securing such material in connection with the persons appointed.

In addition to the regular programme some time will be devoted at each meeting to the consideration of any matters of interest that may be presented by the members, who are requested to submit at *every meeting* anything they consider of general interest, such as photographs, models, sketches, new materials or methods having any relation to architecture.

At each meeting all are invited to make sketches of the subject for the evening.

Blocks of drawing paper will be furnished by the secretary.

The sketches to be the property of the chapter to be kept together.

EDWARD I. NICKERSON, *Secretary*.

Our Illustrations.

Diagrams showing construction of Chicago foundations by Harry Lawrie, architect.

Residence for George Brown, Esq., Chesterton, Ind., by Cicero Hine, architect, Chicago.

Cottage for Mrs. Geo. E. Stall, Winton Place, Ohio, by E. Anderson architect, Cincinnati, Ohio.

Phototype reproduction of photographic group of architects who attended the convention of the Western Association, November 18, 1885.

Dwelling for J. P. Sayer, on Wrightwood avenue, Lake View, Illinois, by W. J. B. McCullough, architect, Chicago; 25 feet front, Anderson pressed brick, brownstone trimmings, hardwood interior finish; cost $7,000.

Residence for John H. Law, Esq., Melrose avenue, Walnut Hills, Cincinnati, by Des Jardins & Hayward, architects, Cincinnati, Ohio. The building is brick with quarry faced Indiana limestone trimmings; cost about $12,000.

Residence for Miss Baldwin, New Haven, Connecticut, by C. H. Stilson, architect, New Haven. The cottage is in the best adaptation of the colonial style, and, like all this architect's work, shows careful study of exterior effect and interior arrangement.

Premium designs of the brick mantel competition, arranged by the St. Louis, Hydraulic Press Brick Company. Premiums awarded by a committee of architects at the Western Association convention at St. Louis; first premium, Emile G. Remmers, St. Louis, Mo.; second premium, Charles E. Shepard, Des Moines, Iowa; third premium, C. A. Kessell, Chicago, Ill.; favorable mention, "Daylight."

Science Hall of the University of Wisconsin, Madison, Wisconsin. H. C. Koch & Co., architects, Milwaukee. This building, which takes the place of the former building which was burned recently, has 203 feet frontage, 126 feet depth, and three stories and basement in height. Basement of Berlin, Wisconsin, granite, and the superstructure will also be of stone, not yet selected. It will be thoroughly fireproof, and will, when completed, contain the departments of physics on the first floor, engineering in the basement, geology on the second floor, and zoölogy and allied studies on the third floor. The center of the building rises into a fourth floor, which will be used as an art gallery, and above this attic rooms devoted to spectrum analysis. The buildings will be heated from a single boiler house, connected by tunnels with the new buildings. The entire improvement will constitute one of the most complete universities in any state.

Correspondence.

JACKSONVILLE, Fla., January 1, 1886.

L. H. SULLIVAN, *Sec. I. S. A. A.:*

Fully realizing the benefits of association to members of our profession, an effort is now being made to organize a state association of architects for Florida. Our anxiety to escape the rocks on which so many similar undertakings have been wrecked must be my excuse for asking if you will please send me a copy of the constitution and by-laws of your state organization, together with such other needed information as you can give without encroaching too much on your valuable time, a compliance with the above request will place me under obligations, which I shall take pleasure in reciprocating at the first opportunity.

Yours fraternally,

H. B. BEEBE, *Architect.*

[We receive this letter as we go to press, too late to include in the editorial mention made of other state organizations, but we are very glad to see this activity among southern architects, and that they are realizing so soon the importance of state organization. While it is a fact that the architecture in different states must necessarily vary, the conditions and professional requirements are the same, and the Western Association of Architects will heartily welcome this new association in our farthest southern state, its national character being thereby doubly enforced.—EDITORS INLAND ARCHITECT AND BUILDER].

IN a city like Chicago where the building operations amount annually to such vast proportions it becomes a matter of interest to note the different improvements made in the various lines of goods comprised under the general head of builders' hardware. Chicago is well represented in this branch of trade by several large and well established houses, notable among them that of Sargent Greenleaf & Brooks, 43-45 Franklin street. Among their leading specialties are Sargent & Greenleaf's non-pickable flat key locks, strong, safe, simple and secure as any locks yet invented. Also worthy of special mention are Sargent & Greenleaf's combination locks, whose acknowledged safety and strength have secured their adoption in the United States treasury and in many of the most prominent business structures of Chicago. The globe ventilator, another of their specialties, has gained a reputation in every part of the country. These ventilators are a sure cure for smoky chimneys or badly ventilated houses, and are admirably adapted for churches, factories, schools, halls or theaters and in fact for all classes of buildings, as ventilation is always an important factor in construction. Their spiral riveted pipe is intended for conductor pipes and for ventilating service, and also for heating shops, factories and other large buildings with exhaust steam. Their adjustable sheet-metal elbows and other kindred hardware specialties will be found listed in their catalogue.

Mosaics.

THE steam heating of the new warehouse, being erected for Marshall Field at Chicago by architect H. H. Richardson of Boston, will be placed by Frederic Tudor of New York and Chicago.

MERCHANT & CO., the well known importers of guaranteed roofing plates, of Philadelphia and New York, have established a branch house in Chicago at 135 Lake street, where a full stock of their celebrated brands will be kept constantly on hand.

MESSRS. LOCKWOOD & KIMBALL have removed their main office from 159 La Salle street to 162 Washington street. The Kimball & Cobb Stone Company have also taken a suite of rooms at 162 Washington street, their offices formerly being at the yards, corner of Twenty-ninth and Clark streets.

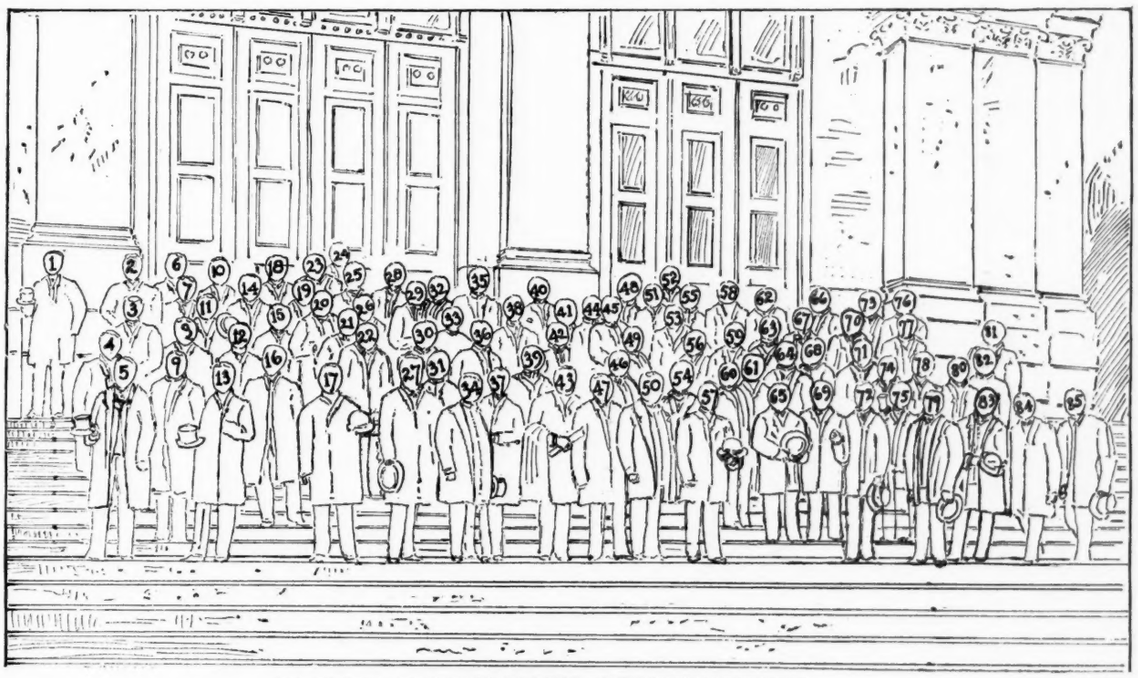
PHOTOGRAPHS of the architects, who attended the American Institute Convention at Nashville, Tenn., have been prepared and handsomely mounted by the photographer, Mr. T. M. Schleier of Nashville. The photograph is a particularly fine one and as it represents a large number of the oldest and most celebrated architects now living, it should find a place in the library of every member of the profession. They sell at $1.50 each.

T. CLARE PERRY, who has for several years been prominently connected with the introduction of the exhaust ventilator fan, has connected himself with the radiator manufacturing firm, The A. A. Griffing Iron Works of Trenton, N. J. Mr. Perry as a business man has been phenomenally successful, and has a large circle of business acquaintances throughout the country particularly in the West, and as the western representative of this house will fill the position with credit to himself and the firm he represents, particularly as he handles one of the best radiators in any market. For the present Mr. Perry is located at 116 Dearborn street, Chicago.

INSIDE blinds form so important a feature and contribute so largely to the comfort and finish of houses that it is not strange that a number of good forms of manufacture are superseding the old clumsy and obtrusive style of folding blinds. A blind made by the Conway Manufacturing Company of Milwaukee is obtaining among architects because of its simplicity and perfect action. They do not interfere with any kind of window drapery and can be placed as close to the window as desired, and opening from the center they move easily and smoothly up or down as desired. They are made in any design or wood as ordered to harmonize with the interior finish.

JAMES W. QUEEN & COMPANY, dealers in mathematical, optical and philosophical instruments, of Philadelphia, call attention to the fact that with the new year just opening so favorably for increased business, they are better prepared than ever before to give the attention to the wholesale trade that it deserves. During the past six months they have added very largely to their line; are putting up goods in new and very handsome styles, and are determined, if strict attention to the interests of patrons will accomplish it, to secure a largely increased business. Their representatives, Messrs. T. L. Johnson and H. L. Dover, will start in a few days to visit their respective territories.

ARCHITECTS are not only observant in regard to that which pertains to their own profession but they appreciate perfect mechanism and systematic arrangement wherever it comes under their observation. The late trip made by Chicago and other architects over the Chicago and Alton Railway to St. Louis created in their minds a permanent impression in favor of this road. They examined the fittings and decoration of the handsome cars, showed an interest in the upholstery and even tested the working of the electric bell which communicated between the smoking appartment and the buffet, the latter curiosity being probably stimulated by a desire to see the porter perhaps. But one feature, which it was remarked is found on no other railway, east or west, is the employment of a man selected from conductors of long service at a good salary whose sole business it is to remain at the rear of the train and keep a lookout behind; and when a stoppage of any duration occurs he goes back along the track and places torpedoes and lanterns to signal any train that may approach. This makes it next to impossible for that most common of accidents, the collision of one train with the rear of another, to occur to any passenger train on this road. It is only a few days since that a train in Georgia near Atlanta telescoped "the rear sleeper of another and killed fourteen people, the singular part of which was that none of these were apparently injured by the collision but all killed by the escaping steam, a horrible accident(?) that could not have occurred upon the Alton. This progressive road is now experimenting with an electric device as a substitute for a conductor's signal. A gong is placed in the engine cab and also in the baggage car in order that the baggage man may be a check upon the engineer. A gong is placed in each car, and as the enterprising management spare no pains where the comfort or safety of their patrons are concerned, they will probably be successful in this. Judging from the remarks made by the architects, if the general public are as observant this road should be very popular.



KEY TO PHOTOGRAPH OF ARCHITECTS

ATTENDING THE SECOND CONVENTION OF THE WESTERN ASSOCIATION AT ST. LOUIS, NOVEMBER 18, 1885.

1. S. A. J. Preston.
2. W. W. Sanborn.
3. L. B. Dixon.
4. H. S. Jossleyn.
5.
6. A. F. Rosenheim.
7. D. W. Millard.
8.
9. E. H. Taylor.
10. W. H. Cusack.
11.
12. C. E. Baldwin.*
13. I. Hodgson.
14.
15. T. W. Brady.
16. L. Beaver.
17. G. P. Washborn.
18. L. D. Cleveland.
19. I. S. Taylor.
20. R. C. McLean. †
21. A. P. Wright.
22. John Beattie.
23. Wm. Holabird.
24. S. M. Randolph.
25. W. W. Boyington.
26. J. C. Cochrane.
27. G. W. Field.
28. B. Bergholtz.
29. F. O. Weary.
30.
31. G. M. D. Knox.
32. J. W. Yost.
33. Alfred Smith.
34. L. S. Buffington.
35. H. P. McDonald.
36. J. H. McNamara.
37. L. M. Wood.
38. H. L. Gay.
39. W. A. Swasey.
40. Thos. N. Philpot.
41. E. S. Hammatt.
42. G. W. Kramer.
43. G. W. Rapp.
44. O. C. Wehle.
45. J. F. Haskell.
46. G. Vigeant.
47. Sidney Smith.
48.
49. C. H. Lee.
50. D. H. Burnham.
51. Prof. N. C. Ricker.
52.
53. E. T. Carr.
54. S. A. Treat.
55. F. D. Hyde.
56. W. L. Plack.
57. E. O. Fallis.
58. F. M. Ellis.
59.
60. L. H. Sullivan.
61. J. W. Root.
62. Wm. Embley.
63. L. C. Bulkley.
64. C. O. Hansen.
65. C. E. Illsley.
66.
67. E. H. Ketcham.
68. S. A. Bullard.
69. D. Adler.
70.
71.
72. W. F. Hackney.
73. W. L. B. Jenney.
74. J. F. Alexander.
75. J. O. Hogg.
76. L. Muller, Jr. ‡
77. C. C. Hellmers, Jr.
78. E. F. Fassett.
79. C. K. Ramsey.
80. A. Van Brunt.
81. J. S. Blake.
82. J. B. Legg.
83. T. J. Furlong.
84. J. G. Cordner.
85. D. M. Harteau.

*Managing Ed. *N. W. Architect.* †Managing Ed. INLAND ARCHITECT. ‡Manager INLAND ARCHITECT.

Every effort has been made to ascertain the names of all those composing the photographic group, but a few are missing. We shall be obliged for the names of those left out of above list that they may be published in our next number.—[EDITORS INLAND ARCHITECT.]

Synopsis of Building News.

THE BUILDING SITUATION.

OFFICE OF THE INLAND ARCHITECT AND BUILDER,
January 2, 1886.

The rather exceptional activity in the building trades in all the larger cities of the country is largely due to the fact that the fall trade was larger than had been generally anticipated, and to the fact that prices exhibited an unexpected improvement. Investors, manufacturers and builders took courage at this and began at once to take steps to profit by the improvement, which they hope will continue throughout the winter and into the spring. It will be remembered that as far back as 1879, when the improving tendency set in, that manufacturers of all kinds having suffered so severely during the preceding six years, began creeping on their hands and knees, so to speak. They were afraid to manufacture heavily. They waited on orders. Demands grew unexpectedly. Raw material soon advanced in value. There were no stocks to draw upon: capital long idle plunged into activity; enterprises long held in check sprang forward to take advantage of the opportunities. Production was unequal to the emergency, prices everywhere advanced. This led to the boom of 1880–82. Is there any possibility of such a disaster? For three months past the gradual improvement in demand and in price has been strengthening the foundation of confidence. Manufacturers have been enlarging their capacity; an immense amount of manufacturing capacity has been created. Makers of machinery have been busy and are now better supplied with orders than they have been for twelve months. As it is, makers have been obliged to increase their force. Makers of wood-working machinery are now exceptionally busy. Manufacturing interests everywhere feel encouraged to push forward. The probabilities for the next six months are more clearly indicated in the iron trade than in any other branch of industry. Prices of iron and steel have advanced, even crude iron is selling at from $1 to $3 per ton higher than summer quotations, and finished iron from $2 to $4 per ton, with steel rails at from $7 to $9 per ton above summer prices. All these facts afford encouragement and give comfort. The builders argue from these evidences of improvement that the coming winter and spring will bring great activity. They will not be mistaken. Were we to enter upon an epoch of enormous railway construction, capital would naturally seek this enticing avenue of investment. Less money would be left for legitimate enterprise. As it is, while railroad building will likely increase largely, general investors will not profit much by it, because the construction will be mainly paid for out of the earnings rather than outside of borrowed money. We do not need to seek railroad building alone for evidence of coming activity. A better kind of evidence is to be found in what manufacturers and builders propose to do. Comparing building enterprise with what it was twelve months ago, we find more permits being taken out, more enterprises projected, more capital seeking investment, and more abundant opportunities opening up. The upward tendency in prices referred to, instead of having a discouraging effect, is stimulating investments. A downward course of prices checks enterprise, an upward course is encouraging it. The low rate of interest is offset by the difficulty of obtaining loans from banks. Interest is low only on government or good municipal securities, and taking the financial centers all through, the interest is high on ordinary securities as real estate and on "one" or "two name" paper. This, however, has only little bearing upon the situation from the standpoint of the architects or builders. Legitimate enterprise will find abundance of money to assist it. The higher prices prevailing, the greater demand presented, the enlarging consumptive capacity of the country and the general improving additions, all warrant a verdict and conclusion that manufacturing and building enterprises will be pushed forward with more vigor in 1886 than they have been in 1885. The Northwest will profit most by the improvement. Despite the attractions which the people of the Southern States are endeavoring to hold out to immigrants and capital, the tide is still running toward the great West and Northwest. Railroad building in the Northwest will be doubled in 1886. Agricultural interests will receive no set back, foreign demand for American cereals will not be jeopardized by Egyptian or Asiatic competition. Manufacturers of machinery and of railway material and appliances of tools, and of agricultural implements, and of crude and finished iron and steel, all feel encouraged and are putting their furnaces, shops, factories and mills into shape fit to increase their production fully twenty-five per cent. Values will be more prominent during the coming year. There will be fewer risks to take. The country is gaining in vigor as a whole and its industries are vitalized by the expanding demand of the past six months. Real estate is not jumping in value, and the improvement in this and all other western cities as well as the east is legitimate. The agricultural implement manufacturers have within sixty days received evidences which justify them in preparations for an increased output. The plough-makers will advance prices ten per cent. The barbed wire makers expect to sell more wire next year than this. Tool makers are now busier than for six months. The lumber men are prepared for a winter of old time activity. The lumber "cut" will be as large as last winter. Advices from the East are of a similar character. While nothing of a booming nature is threatened we are confident of a full activity legitimate and endurable. The improvements will be such as to not stimulate an undue production. One very encouraging feature of the past thirty days has been the projection of a host of small manufacturing enterprises, on a capital from $5,000 to $50,000; Chicago has led the way in this respect. Its projection of new enterprises covers almost every line of activity. Hereafter, instead of depending on the Eastern markets for supplies so largely, we will find ourselves independent, measurably so. The industrial spirit is extending throughout the West. In large numbers of towns little manufactories are springing up. Labor is profitably employed, and a sufficient supply is assured to prevent any abnormal rise in its value. An eight-hour agitation is in progress throughout the country with a view of establishing eight hours as a day's work on and after May 1. It would be well to keep this agitation in mind, as systematic efforts are being made under able leadership to make the effort a success. Labor is better organized and is stimulated to better combined movements than ever before. In regard to prices of material it is safe to say that any departure from present quotations will be in an upward rather than a downward direction, excepting in cases like nails, which will probably decline again in the spring.

Aberdeen, Dak.—Architect C. A. Wallingford, of St. Paul, Minn., reports: For John T. McChesney, two-story frame dwelling, 40 by 50 feet; cost $4,000.

Buffalo, N. Y.—Everything in the building line is quiet at present, with not much new work. The architects feel confident that next season will be unusually busy, as plenty of work is promised as soon as the season opens.

Architect W. W. Carlin reports: For State of New York, frame barn and tool house, cost $10,000; under way; Jacob Saeckel, builder. For Caledonian Curling Club, frame ice rink, 72 by 167 feet, cost $3,500: under way; Jacob Saeckel, builder.

Architects Swan & Faulkner report: For A. Wepnerr, two-story frame residence, cost $10,000; under way; Runnrill & Rupp, builders.

Architect M. E. Beebe reports: For Judge W. H. Grimes, two-story brick residence, mansard roof, cost $12,000; under way; Charles Berrick, builder.

Architect Geo. J. Metzger reports: For Loewer Sieber & Streicher, four-story brick factory building, cost $10,000; under way.

Architect R. A. Bethune reports work progressing on Armory building, 120 by 285 feet, for 74th Regiment, N. G. S. N. Y., cost $54,000; J. H. Tilden, builder.

Calhoun, Ind.—Architect C. A. Wallingford, of St. Paul, Minn., reports: For C. W. Fairbanks, two-story brick building, 40 by 75 feet; cost $20,000.

Chicago, Ill.—Architects J. M. Van Osdel & Co. have completed the following work during 1885: For E. Smeeth, corner Eagle and Desplains streets, five-story and basement building, pressed brick and Bedford stone, cost $20,000. A. T. Merriman, two-story basement and mansard, 20 feet frontage, pressed brick, brownstone, Jackson street, near Laflin, cost $9,000. Geo. Ross, two-story basement and mansard, 18 feet frontage, on Jackson street, near Laflin, pressed brick, brown stone, cost $5,000. Frank Burnam, two-story basement and mansard, 25 feet frontage, on Vernon avenue, near Thirty-second street, pressed brick, brownstone, cost $6,000. C. B. Farwell, improvements to Farwell House, corner Halsted street and Jackson, cost $30,000. Jonathan Clark, corner Sherman and Jackson streets, six story and basement office building; frontage, 50 feet on Sherman and 101 on Jackson, cost $150,000. Wm. H. Brett, three-story, cellar, flat building, corner Adams and Aberdeen streets, pressed brick and brownstone, cost $7,500. Miss Fannie Sweetser, four-story and cellar building, on Halsted street, near Jackson, 50 feet frontage, pressed brick, cost $20,000. Wm. Loyds, two two-story and basement houses and flat building, corner of Monroe and Leavitt streets, pressed brick and brownstone, cost $15,000. Mrs. Chisholm, two-story and basement dwelling-house, on Jackson street, near Ashland, 25 feet frontage, pressed brick and brownstone, cost $5,000. Isaac McCourtie, two two-story basement and mansard dwelling-houses, on Washington boulevard, pressed brick and brownstone, cost $15,000. Chas. C. Heisen, six-story and basement office building, corner Dearborn and Quincy streets, 50 by 100 feet frontage, pressed brick and nickel plate stone, cost $40,000. C. B. Carter, two-story dwelling-house, on Vernon avenue, near Thirty-second street, pressed brick and brownstone trimmings, cost $8,000. Jno. Spry, two three-story and basement dwelling-houses, 36 feet frontage, pressed brick, brownstone trimmings, cost $12,000. J. T. Dale, seven-story and basement building, 200 feet frontage on Dearborn street, same frontage on Fourth avenue, pressed brick and Bedford stone, cost $180,000. Robert Bines, seven-story and basement building, 50 feet frontage on Dearborn street and 50 feet on Third avenue, pressed brick and stone trimming, cost $40,000. Blake, Shaw & Page, in the rear of 196 and 192 Clark street, to take place of the old Wodman bakery building; new building is to be 75 by 60 feet, six stories high, cost $25,000. Newman Bros., No. 400 West Madison street, remodeled into stores and flats, cost $15,000. Mrs. M. B. Neff, two three-story and basement flats buildings, 48 feet frontage, pressed brick and brownstone, cost $13,000. R. W. Rathbone, two-story basement and mansard dwelling-house, Hyde Park, pressed brick and brownstone, cost $16,000. E. H. Gammon, Batavia, Ill., two-story and cellar frame residence, cost $15,000. Judge Zearing, seven-story basement building, 25 feet frontage on Dearborn street, near Van Buren, pressed brick, Bedford stone, cost $20,000. Total, $663,500.

Architect Henry T. Kelly reports the following work for 1885: For Columbia Skating Rink, three-story and basement, pressed brick, stone and terra-cotta building, 125 by 118 feet, to contain five stores, skating rink and flats above, cost $40,000; Julius Meyer, carpenter; Lund & Gilbert, masons. For John H. Rapp, two-story and attic brick residence, 33 by 60 feet, cost $17,000. For R. and Mrs. M. Bartels, four-story and basement building, 77 by 120 feet, cost $23,000. For W. Spengler, four-story and basement building, 50 by 118 feet, cost $21,000. For Joseph Niemozewski, four-story and basement building, 48 by 92 feet, cost $17,000. For M. Schulz, four-story and basement building, 69 by 108 feet, cost $15,000. For T. Helmke, three-story and basement building, 45 by 81 feet, cost $13,000. For school board, at Jefferson, Ill., two-story additions to school building, 25 by 46 feet, cost $12,000. For R. Johannes, three-story and basement building, 24 by 75 feet, cost $11,000. For R. Perl, two-story and basement building, 48 by 92 feet, cost $10,000. For John Mergen, three-story and basement building, 25 by 80 feet, cost $9,000. For Fred Bock, two-story and basement building, 30 by 70 feet, cost $8,000. For E. Uihlien, two-story and basement building, 25 by 50 feet, cost $7,000. For E. M. Kubitz, three-story and basement building, 25 by 70 feet, cost $7,000. For Theo. Krenger, two-story and basement residence, 27 by 58 feet, cost $7,000. For J. Kranter, three-story and basement building, 25 by 80 feet, cost $7,000. For Joseph Klatscher, three-story and basement building, 22 by 70 feet, cost $7,000. For Geo. Mages, two-story and basement dwelling, 29 by 50 feet, cost $6,000. For John C. Spengler, two-story frame residence, at Jefferson, 41 by 52 feet, cost $5,000. For John Eisner, two-story shop, 30 by 80 feet, cost $5,000. For F. J. Sievert, three-story and basement building, 22 by 59 feet, cost $5,000. For A. J. Kowalski, four-story and basement building, 25 by 80 feet, cost $10,500. For G. Schlenger, two-story and basement building, 21 by 60 feet, cost $6,000.

Architects Ackermann & Smith report: For George Birkhoff, two two-story brick dwellings, 42 by 48 feet, on Division street near Robey, pressed brick front, stone trimmings; cost $6,000; under way. For Thomas Powers, two-story store and flats, 25 by 73 feet, on Archer avenue, pressed brick front, stone trimmings; cost $6,000. For Z. Davidson, three-story store and flats, 25 by 80 feet, 59 Wilson street, pressed brick and brown stone front; cost $8,000.

Architects Bauer & Hill report: For H. Braun two-story brick, stone and terra-cotta dwelling, 35 by 80 feet at Lake View; cost $20,000; not yet commenced.

Architect Wm. A. Furber: For Wm. Cass, four-story stores and flats, 94 by 44 feet, 167–173 Harrison street, pressed brick and brown stone; cost $28,000; under way; McGraw & Earth, masons; F. C. Neagle & Sons, carpenters. For F. Larned, two three-story stone front dwellings, 38 by 53 feet, Michigan avenue, near Twenty-seventh street; cost $20,000; under way.

Architects Burling & Whitehouse: For Ann Wolfe, three two-story stone front dwellings, 50 by 60 feet, 85–87 Thirty-third street; cost $10,000; under way; Fox & Hinds, builders.

Architect Julius H. Huber: For R. Schurig, three-story store and flats, 24 by 57 feet, on Wells street, pressed brick front with stone trimmings; cost $8,000; under way; Roessler & Winkler, builders.

Architect S. S. Beman: For C. W. Brega, three-story building, 48 by 67 feet, on Michigan avenue, near Twenty-ninth street; cost $40,000.

Architect Wm. H. Drake: For Robert Tobin, three-story store and flats, at 188 Blue Island avenue; cost $6,000.

Architect John Otter: For C. E. Robinson, three-story store and flats, 25 by 96 feet, on South Clark street; cost about $10,000. For W. P. Hock, two five-story stores and flats, 50 by 50 feet, on North Halsted street, pressed brick front; cost $18,000; under way; Wolff & Feldmann, masons; E. Carson, carpenter.

Architect J. J. Flanders: For Kraus & Mayer, four-story stores and flats, 100 by 90 feet, on West Twelfth street; cost $45,000.

Architect E. Baumann: For G. W. Smith, five-story warehouse, 40 by 100 feet, on Michigan street; cost $16,000.

Architects Cobb & Frost: For Johnson estate, two-story addition to building on Rush street; cost $12,000.

Architect L. G. Hallberg: For John M. Thatcher, seven two-story dwellings, 130 by 60 feet, Ellis avenue and Thirty-seventh street, pressed brick and stone front; cost $25,000. For L. L. Coburn, two three-story stores and flats, 40 by 55 feet, 275–277 West Van Buren street, pressed brick and terra-cotta front; cost $10,000; under way; T. Tobiasson, mason; J. Aube, carpenter. For S. E. Gross & Co., two-story flat building, 22 by 50 feet, on West Monroe street; cost $6,500.

Architect Thomas & Rodger: For C. E. Brown, three-story store and flats, on West Harrison street, pressed brick front, stone trimmings: cost $12,000; under way; Wm. Boyington, builder.

Architect H. R. Wilson: For. W. F. Whitman, three-story apartment building, 46 by 72 feet, Laflin and Congress streets, St. Louis pressed brick front; cost $5,000.

Architect W. L. Carroll: For W. McAllister, two-story frame dwelling, 44 by 44 feet, on Forty-seventh street; cost $8,000. For H. J. Palmer, three-story apartment house, 26 by 56 feet, on South Park Avenue, pressed brick and stone; cost $5,000.

Architect S. V. Shipman: For A. M. Fuller, three-story and basement store and flats, on West Van Buren street, brick with stone front; cost $15,000.

Architects Holabird & Roche report: For James S. Norton, four two-story dwellings, pressed brick, stone and terra-cotta fronts; cost $14,000; Fitzgerald & Burke, builders; under way. For James Dillon, two three-story buildings, stores and flats, 50 by 60 feet,

State and Forty-first streets, pressed brick, stone and terra-cotta front; cost $16,000; J. Fitzgerald and J. Voss, builders. For H. H. Brown, three-story store and flats, Polk street and Ogden avenue; cost $16,000.

Architect Julius Speyer: For Geo. H. Norris, two four-story flats buildings; cost about $40,000.

Architect B. W. S. Clark reports: For E. Maynard, two-story dwelling, 48 by 60 feet, in Englewood, Indiana pressed brick, with terra-cotta trimmings; cost $6,000. For John Bevan, four-story store and flats, 26 by 32 feet, at 385 Dearborn street, Indiana pressed brick, stone trimmings; cost $4,000; under way.

Architect John Wagner: For Messrs. Vierling, McDowell & Co., three-story brick building, 50 by 94 feet, on Twenty-third street; cost $15,000; under way; Barney & Rodatz, builders.

Architect W. A. Arnold reports: For E. Hartsel, at Tracy, Ill., frame dwelling 34 by 56 feet; cost $4,500; projected. Also, four country houses, costing from $2,000 to $2,800; under way.

Architect W. I. Beman has opened an office at No. 79 Dearborn street and reports the following work on hand: For W. H. Minor, double frame dwelling on Rosalie court, near Fifty-eighth street; cost $6,000. For E. Healy, nine-room frame cottage on Rosalie court, near 57th street; cost $4,000. For W. I. Beman, a nine-room cottage on Washington avenue, near Fifty-fourth place, to be built entirely of fireproof tile; cost $4,500. A two-story and attic and basement parsonage for the Presbyterian society, on Fifty-third street. The first story to be of brick and stone, second story slate; cost $6,500. For W. I. Beman, two-story and basement cottage; cost $4,500. For V. D. Valentine, tile, brick and slate cottage; cost $4,500.

Cincinnati, O.—The following is reported by the Secretary of the Builders' Exchange: The open winter that we are having has been thoroughly taken advantage of by contractors in every branch of the building business. The result is, that many buildings will be found in a state much nearer completion than was looked for.

Our Builders' Exchange is still wrestling with the new building laws, but much valuable time is being wasted in WINDY discussions, criticisms and amendments, which to say the least are certainly discourteous to the committee, who spent several months in their compilation. There is no city that has such incomplete laws governing the erection of buildings, as Cincinnati, and if the Exchange fails to act in the matter, it allows to slip a goldenopportunity to secure a much coveted position in the front ranks of mercantile institutions.

Steps will soon be taken toward the demolition of the old postoffice, and erection of our new Chamber of Commerce.

Architect Chas. Crapsey reports: Prospects excellent for the spring. One of the most attractive plans, which he has on the boards, is the residence for J. W. Pfaff, Esq., at Wyoming. This is a 2½-story frame house of nine rooms, slate roof, pine finish and cherry stair case; cost $6,000.

Architect Jas. McLaughlin also reports encouraging prospects for the spring. He is engaged in preparing plans for the Aetna Fire Insurance Company for a six-storied stone front store, upon the site of the present building on Vine street.

Architect Saml. Hannaford is ir the same happy mood concerning work, his time being well occupied. For H. W. Derby, a six-story brick store building, 49 by 125, with an L; the building will face on Fourth street, near Central avenue, and the L on Central avenue; cost $6,000.

Alms & Doepke will build a large addition to their store, on N. W. cor. Canal and Main, in the same general style as their present store; contract not let.

Architect Geo. W. Rapp reports: Prospects good. For H. F. Bush, a slaughter house and sausage factory, 60 by 90, two-story high; cost $8,000. For Geo. W. Britt, a five-story store building, two stores to be of iron; cost $12,000.

Architect Edwin Buddemeyer reports in a general way the following: A brick school-house on Walnut Hills; addition to school-house on Brown street, city; a brick school-building in Cumminsville, city; alterations to Public Library Building.

Architects Plympton & Trowbridge have their time well employed and their work speaks for them a bright future. They have planned the residences of Geo. T. Harrison, E. H. Pendleton, Chas. Kebler. Their latest plan is a residence for Harry Hulbert, Esq., boulders for first story, one-half timber for second story and gables; house contains fifteen rooms with attic and will cost $10,000. For Otto Reich, an eight-roomed residence or chalet, two-story with tile roof in the "Cinque Cento" style of architecture, the first story will be stone, and the second one-half timber, hardwood finish, etc.; cost $6,000.

Dubuque, Iowa.—Architect F. D. Hyde reports: For G. L. Torbert, block of six two-story stores, 102 by 55 feet; cost $10,000; plans under way. For James Mullen, block of two three-story brick stores, 49 by 36 feet; cost $3,000; plans under way.

Fremont, Neb.—Architects Mendelssohn & Fisher: Omaha, Neb. For Fred. Meyer, a brick block, to cost $14,000.

Laramie, Wyo. Ter.—Outlook good. A large amount of work projected for spring. The chemical works have recently been enlarged, and further additions will be made in the spring.

Mr. W. A. McKenzie, builder, reports the following work under way: Laramie Electric Light Company, one-story brick building, 30 by 100 feet; cost $4,000; Cook & Callaghan, builders. Knadler & Rand, two-story brick building, 48 by 120 feet; cost $8,500; W. H. Holliday, builder. W. Mansfield, two-story brick store building, 24 by 70 feet: contract not let. Fenfrock & Thobro, two-story brick store building, 24 by 30 feet; cost $5,000; under way; W. H. Halliday, builder.

Minneapolis, Minn.—Architects Groff & Dustin report: For P. G. Lamraux, a block of fourteen tenements, 134 by 35 feet, four stories high, to be built of pressed brick, finished with all modern improvements, on corner Eighth avenue North and Lyndale street; cost between $60,000 and $75,000. For P. G. Lamraux, a two-story frame dwelling, 24 by 52 feet, on Lake street, to cost $3,000.

Architect C. S. Sedgwick reports: For Cobb & McKean, a two-story frame dwelling, 35 by 60 feet, in Oak Park addition, to cost $6,000. For C. L. Reynolds, at Toledo, Ohio, a two-story pressed brick and terra-cotta finished dwelling, 62 by 73 feet, to cost $25,000. For himself, a two-story frame dwelling, 30 by 48 feet, on Portland avenue, to cost $3,000.

Architect Frank E. Read reports: For A. G. Wilcox, a row of four two-story brick-veneered tenement dwellings.

Architect A. Leonard Haley has taken an office in the Eastman Block, and reports that he has on the boards plans for three wholesale buildings to be built of stone and pressed brick veneer, with all modern improvements: the three to cost $100,000; also a dwelling house to be built on Ridgewood avenue, to cost $6,000.

Architect L. Jepson reports: For Mrs. C. W. Thompson, a double two-story frame dwelling, 30 by 50 feet, on Sixth street, to cost $3,000. For J. Condon a two-story frame dwelling, 28 by 44 feet, on corner of Second avenue North and Twenty-third street, to cost $2,500.

Architect I. W. Kelley reports: For. C. T. Harris, a two-story frame dwelling, 35 by 40 feet, in Penny & Badger's addition, to cost $3,000. For J. T. Elwell, a two-story frame dwelling, 35 by 40 feet, in Elwell's addition, to cost $3,000. For S. Clarquist, a double frame dwelling, 30 by 50 feet, on Twelfth avenue, near Lake street, to cost $3,500.

Architect C. F. Struck reports: For Geo. Huhn, a two-story dwelling of ten rooms, on Lyndale avenue, to cost $5,000. For L. J. Rusk, a two-story frame dwelling at Chippewa Falls, Wis., to cost $4,000. A three-story frame and brick-veneered store building at Stillwater, Minn., to cost $15,000. The Dania Hall building, four-stories, 44 by 120 feet, built of stone and brick, on corner of Cedar avenue and Fifth street, cost $25,000. Plans on the boards for Normanna Hall, four-stories, built of brick, 66 by 118 feet, on the corner of Third street and Twelfth avenue South, to cost $40,000.

New Corporations.—The Le Jeune Art, Tile and Ceramic Company, of Chicago, Ill.; capital stock, $10,000; Alphonso Le Jeune, Thomas W. Phillips and Robert Rae, incorporators. The E. Werner Wood-working Company, of Chicago, Ill.; Emil Werner, Elizabeth Werner and Edward Werner, incorporators. The Martin Moylan Plumbing and Drainage Company, of Chicago, Ill., formerly Martin Moylan; capital stock, $25,000; Martin Moylan, Wm. H. Esch and Patrick Moylan, incorporators. The Moore Manufacturing Company, of Chicago, Ill., formerly S. H. & E. Y. Moore, has been incorporated; capital stock, $35,000; Samuel H. Moore, Edward Y. Moore, 163 Lake, and V. Cumberland Moore, Jr., incorporators. The King &

(*Continued on page 120.*)

PRICES OF BUILDING MATERIALS.

CHICAGO, January 10, 1886.

BRICK.	Per M.
Common	$ 8 00@ 9 00
Fronts:	
Chicago pressed (Anderson)	22 00@29 00
St. Louis pressed	27 00
Purington Kimbell "Standard"	26 00
Indiana pressed	16 00@28 00
Philadelphia pressed	42 00@45 00
Milwaukee pressed	25 00
Tiffany Pressed	22 00@30 00
Trenton	38 00
Zanesville (Harris Bros.)	29 00
Perth Amboy Buff	50 00
" " Mottled	50 00
Moulded:	
Chicago (Anderson)	$65 00@300 00
St. Louis	50 00@125 00
Indiana	25 00@ 50 00
Tiffany	
Zanesville (Harris Bros.)	75 00
Enameled:	
Enameledge	90 00
Enameled edge and end	105 00
Enameled (Harris Bros.)	80 00

CEMENT, LIME, ETC.	Per Cask.
Chicago Lime	$ 0 65@ 75
Wisconsin "	96@ 1 00
Milwaukee, Utica, Louisville, Akron.	1 00@ 1 25
Portland	3 25@ 3 50
Keene's coarse	7 50@ 9 00
Keene's fine	11 00@12 50
Plaster of Paris	1 75@ 2 00
Hair (cattle), per bu	20@ 25
Hair (goat), per bu	40
Sand (lake shore), per yard	1 00@ 1 25

STONE.

(Quotations furnished by J. S. F. Batchen.)

Limestone:	Per cubic foot.
Buff Bedford	$ 50
Blue Beaford	65
Hoosier blue Bedford	65
" buff "	50
Joliet	35@ 50
Lemont	40@ 50
Salem Oolitic	50
Foundation:	
Dimension	20@ 25
Rubble, per cord	8 00
Sidewalk	40@ 1 00
Planed	40@ 1 00
Sandstone:	
Hummelstown Brown Stone	1 50
Brown Connecticut	1 50
Amherst	60@ 75
Berea	55@ 65
Brown Potomac	1 25
Carbondell	1 10
Malone Blue	55@ 65
Long Meadow Brown Stone	55
" " Red "	65
New York bluestone	1 35@ 1 40
Marble:	
Italan, veined	4 00
Marble, continued:	
Tennessee, red	2 50@ 5 00
Tennessee, Knoxville	3 00
Vermont, white	3 50@ 8 00
Ophite	4 50@ 5 00
Armodite	1 50
Slate:	
Roofing, Vermont, per square:	
Green	6 50
Purple	6 50
Red	13 50
Black, Lehigh	5 75@ 6 75
Black, Chapman's	7 30@ 8 00
Black, Bangor	5 50@ 5 80

LUMBER, CAR LOTS.

(Lumbermen's Exchange, 250 So. Water St).

Boards: (Ordinary Dimensions.)	
Pine, 1st quality, clear	$46 00@48 00
Pine, 2d quality	45 00@47 00
Pine, 3d quality	43 00@44 00
Common	13 00
Siding:	
Pine	10 50@22 00
Framing Timber:	
Pine	12 00@17 00
Laths:	
Pine	2 00
Shingles:	
Pine (sawed)	2 10@ 2 60
Cedar	2 25@ 2 35
Miscellaneous:	
Pickets, pine	9@ 11
Posts, cedar	9 00@21 00
Pine, yellow southern	30 00@35 00

HARDWOODS.

(Quotations furnished by The Holbrook Co.)

Walnut, 1st & 2d, 1 in	$ 75 00@ 80 00
1¼ and up	80 00@ 100 00
Walnut, counter top	15@ 20
Ash, 1st & 2d, 1 in	30 00@ 32 00
1¼ & up	33 00@ 36 00
Maple, 1st & 2d, 1 in	25 00@ 35 00
1¼ & up	35 00@ 40 00
Oak, white, 1st & 2d, 1 in	30 00@ 35 00
1¼ & up	35 00@ 40 00
Oak, red, 1st & 2d, 1 in	30 00@ 35 00
1¼ & up	35 00@ 40 00
Oak, quarter sawed	40 00@ 50 00
Cherry, 1st & 2d, 1 in	75 00
1¼, 1½ & 2 in	80 00@ 85 00
2½, 3 & 4 in	95 00@ 100 00
Beech, Red, 1st & 2d	25 00@ 30 00
Whitewood, 1st & 2d, 1, 1¼, 1½ & 2 in	26 00@ 30 00
2½, 3 & 4 in	32 00@ 38 00
Birch, red, 1st & 2d	35 00@ 40 00
Butternut, 1st & 2d, 1 in	45 00@ 50 00
1¼ & up	50 00@ 55 00
Sycamore, 1st & 2d	20 00@ 25 00
Gum, red, 1st & 2d, 1 in	25 00@ 30 00
1¼ & up	35 00@ 40 00

FINISHING WOODS.

Mahogany, Mexican, per lb	15@ 20
Mahogany, St. Domingo, per lb	20@ 25
Finishing Woods, continued:	
Mahogany, Cuba, per lb	12@ 20
Rosewood, per lb	5@ 15

CALIFORNIA WOODS, ETC.

(Quotations furnished by Charles B. Crombie & Co.)

Redwood lumber	$60 00@$65 00
Redwood shingles—square, sexagon, round, diamond and octagon, small quantities	6 50@ 7 00
Mexican Spanish cedar	150 00@300 00
California pine	65 00@ 75 00
Georgia Yellow Pine:	
Flooring:	
1st & 2d clear, 4 in	35 00
1st & 2d clear, 6 in	35 00
Boards, D 1 s	33 00@ 35 00
Beaded Ceiling:	
1st & 2d clear, ½ in	18 00@ 21 00
⅝ in	26 00@ 30 00
⅞ in	33 00@ 36 00
Step plank:	
1st & 2d clear 1¼, 1½ & 2 in	33 00@ 35 00
Georgia Cypress:	
Lumber, 1st & 2d clear	35 00@ 40 00
Shingles	3 75@ 4 25
Frame Oak Lumber and Timber:	
Plank	23 00@ 25 00
Timber	24 00@ 30 00

PAINT, ETC.

	Per lb. Dry.	Per lb. In Oil.
White lead (American)	$	6¼@ 7
Zinc, white (American)	8@10	10@ 12
Red, Venetian	2@	6@ 12
Red, Vermilion	20@50	40@1 00
Red, Indian (English)	12@	22
Yellow, Ochre	2@	15
Yellow, Chrome	18@	25
Green, Chrome	12@	20
Green, Paris	20@	35
Black, lamp	8@	30
Blue, ultramarine	16@	35
Putty		3
Whiting (dry)	1@	2
Paris white (English)	2@	3
Litharge (American)	6@	10
Sienna, burnt	9@	16
Umber, burnt	7@	16
Oil, linseed (raw), per gal		42
Oil, linseed (boiled), " "		45
Turpentine " "		40
Varnish, coach, " "	1 25@	2 00
Varnish, shellac, " "	3 25@	4 00

HARDWARE.

Nails:	Per Keg.
Spikes, wrought	$3 75
Tenpenny, common	3 00
Shingle, 4's	3 75
Lath, 3's fine	6 00
Steel nails, 10's to 60's	3 15

For steel nails add 15 c. per keg.
For finishing-nails add $1.50 per keg.
For casing-nails add 75 c. per keg.

Andrews Company, of Chicago, Ill., formerly doing business under the same title, has been incorporated; capital stock, $60,000; Rockwell King, John W. Andrews and Chester M. Dawes, incorporators.

Ormsby Grate and Mantel Company, Milwaukee, Wis.: object, to manufacture grates, mantels, monuments, etc.; capital stock, $25,000; incorporators, H. S. Dodge, R. H. Ormsby and E. A. Ormsby. The Hadfield Cement Company, Milwaukee, Wis.: object, to manufacture cement, lime and building material; capital stock, $50,000; incorporators, A. H. Hadfield, G. A. Hadfield, T. C. Cook, H. Herman, E. Hyde and F. M. Hoyt.

New Orleans, La.—It is quite dull in building circles.

Architects Thos. Sully & Co. report: For orphan asylum, three-story brick building, 150 by 300 feet, to cost $70,000; under way. For New Orleans National Bank, four-story and attic building, 57 by 47 feet; first story of brown stone, above to be of brick and terra-cotta; cost $40,000; under way; contracts sub-let.

Omaha, Neb.—Architects Mendelssohn & Fisher: For A. Johnson, residence, to cost $10,000.

Architect Henry Voss has prepared plans for the Episcopal Seminary, to cost $45,000.

St. Louis, Mo.—Architect F. J. Capitain, for A. Soderer, two-story brick dwelling; cost $8,000; W. J. Hagee, builder. For Mrs. E. Gresser, two-story brick dwelling; cost $6,000; W. J. Hagee, builder.

Architect C. C. Helmers, Jr., for Mrs. Alice Potter, two-story brick dwelling; cost $5,000.

Architect Geo. W. Pipe, for H. T. Jones, two-story brick dwelling; cost $5,600.

Architect Wm. E. Bent, for Third National Bank, repairing building damaged by fire; cost $10,000; the architect is the contractor.

Architect Alexander Cameron, for St. Louis box factory, two-story brick factory building; cost $18,000.

Architects E. Jungenfeld & Co., for Growne Brewing Co., two-story brick addition to brewery; cost $7,000.

St. Paul, Minn.—The past month has been quite dull. There is considerable work projected and on the architects' boards, which is not far enough advanced to report at present.

Architect C. A. Wallingford reports: For C. W. Bunn, a two-story frame dwelling, 40 by 75 feet, on Portland avenue, to cost $8,000.

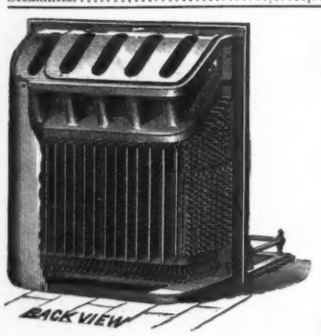
Architects Knight & Nenhausen report: For J. Hennessey, a three-story brick hotel building, 40 by 145, on corner of Rosabel street and Broadway, to cost $36,000. For A. Simon, a double two-story frame dwelling, 50 by 50 feet, on Canada street, to cost $3,600.

Architect Albert Zschocke reports: For Joseph Minea, a three-story double brick store building, 50 by 75 feet, on Dakota avenue, West St. Paul, to cost $12,000.

The past month has been very slack among the profession here.

PRICES OF LABOR.

	Akron, O.	Austin, Tex.	Bloomington, Ind.	Buffalo, N. Y.	Chicago, Ill.	Cheyenne, W. T.	Cincinnati, O.	Dubuque, Ia.	Des Moines, Ia.	Detroit, Mich.	Evansville, Ind.	Fargo, D. T.	Hastings, Neb.	Joliet, Ill.	Kansas City, Mo.	Minneapolis, Minn.	Omaha, Neb.	Sioux City, Ia.	St. Louis, Mo.	Toledo, O.
Bricklayer	$3 00	$4 00	$4 00	$3 00	3 50@4 00	$6 00	$4 50	$4 00	$4 00	3 50	$3 75	$3 50	$4 00	$4 00	$3 50	$4 00	$4 00	$4 00	$4 50	$4 50
Brickmason (Front)	5 00	5 00	5 00	3 00	4 50@5 00	10 00	4 50	5 00	4 50	3 50	4 50	4 00	4 50	4 00	4 00	5 00	.....	4 50	5 00	6 00
Carpenter	2 50	2 50	2 50	2 50	2 50@2 75	3 50	2 50	2 75	2 50	1 75@2 00	2 00	3 00	2 25	2 50	3 00	2 25	2 50	2 50	2 50	3 00
Cabinetmaker	.....	.....	.....	.....	.....	3 00	.....	.....	3 00	2 00	.....	.....	.....	.....	.....	3 50	2 50	.....	2 50	3 00
Finisher	.....	3 00	.....	.....	3 00	3 50	3 00	.....	2 50	2 00@2 25	.....	.....	2 50	.....	.....	3 00	3 00	.....	2 75	3 00
Gasfitter	.....	.....	.....	3 50	2 50@3 00	3 25	3 25	2 50	2 00	2 50	3 50	3 00	3 00	2 50	3 00	3 00	4 00	4 00	3 50	3 50
Laborer	1 75	1 50	1 50	1 25	1 25@1 75	2 50	1 50	1 50	1 75	1 50	2 00	1 75	1 50	1 50	2 00	1 50	1 50	1 50	1 50	2 00
Painter	2 25	2 50	.....	2 00	2 25@2 50	3 00	2 50	2 50	2 25	2 25	2 50	2 50	2 00	2 25	2 75	2 50	2 50	2 50	2 50	3 00
Glazier	.....	.....	.....	2 00	.....	3 50	.....	.....	2 25	2 25	2 50	2 50	.....	2 00	3 00	.....	3 00	.....	2 50	2 50
Plasterer	2 50	3 50@4 00	3 50	3 00	8 hrs. 3 50	4 50	3 50	3 00	3 50	3 00@3 50	3 00	3 00	3 00	3 00	3 50	4 00	4 50	3 00	4 50	5 00
Plumber	.....	2 50@3 00	.....	3 50	3 50@4 00	4 00	3 50	3 00	3 00	3 00@3 50	5 00	3 00	3 00	4 00	3 50	4 50	5 00	.....	3 50	5 00
Stonemason	3 00	3 50	2 50	3 00	4 00	5 00	3 50	3 50	3 50	3 25	2 50	.....	3 00	3 00	3 00	3 00	3 50	3 50	4 00	4 00
Carver	5 00	5 00	4 00	5 00	4 50@5 00	4 50	5 50	.....	5 00	5 00	5 00	.....	.....	.....	.....	4 00	5 00	.....	3 00	6 00
Stonecutter	3 50	4 00	4 00	3 50	3 75@4 00	5 50	3 50	3 50	4 00	3 00@3 50	3 00	.....	4 00	3 50	2 75	4 00	4 00	.....	4 00	4 00
Stonesetter	3 50	3 50	3 50	3 00	4 00	4 00	4 00	.....	4 50	3 50	3 50	.....	3 00	3 00	3 50	4 00	4 00	.....	4 00	4 50
Roofer (Tin)	.....	.....	2 75	2 75	2 75	3 25	2 75	2 50	2 00	2 50	3 00	3 00	3 00	2 50	2 75	2 50	3 00	.....	2 50	2 50
Slater	.....	.....	2 75	3 00	3 00	3 25	3 25	3 50	3 00	2 00	3 00	.....	.....	.....	2 50	3 00	.....	.....	3 00	2 50
Stairbuilder	.....	3 50	3 00	3 00	3 25@3 75	4 50	2 75	.....	3 25	2 25@3 00	3 00	5 00	.....	4 00	3 00	2 50	5 00	.....	3 00	5 50
Steamfitter	.....	.....	.....	3 50	3 50	3 50	2 50	3 50	3 25	2 00@2 50	.....	3 00	3 50	3 00	3 50	3 50	4 00	.....	3 50	3 00



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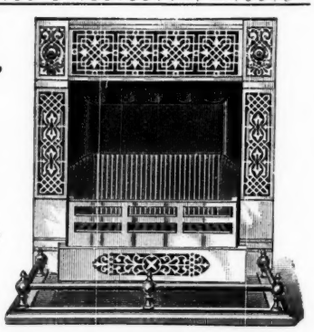

SOME WISCONSIN REPORTS.

(See Back Numbers for Illinois and Michigan Reports.)

The ventilating Grate works splendidly. It warms and ventilates our sitting-room, 18 x 15 x 11 feet, and a bedroom above, 12 x 12 x 10 feet.
CHARLES CHURCHILL,
Clerk Circuit Court, Waupaca.

We have had exceedingly cold weather, but are very well pleased with the working of the grate. The atmosphere in the office is as pure as out-door air.
ANSON EDRIDGE & SON, Fort Howard.

One of our office rooms is 22 x 35 feet, and not until the recent cold weather (30° below zero) were we obliged to call in the assistance of steam heat. The fresh-air supply is especially pleasant.
THE ESTERLEY HARVESTING MACHINE CO., Whitewater.

I regard it as the best, both as a heater and ventilator.
EDWIN REYNOLDS, E. P. Alles & Co.'s Iron Works, Milwaukee.

The Ventilating Grate is in our sitting-room, 18 x 24 x 14 feet. I have kept house for forty years, but have never known such solid comfort, as far as heat and ventilation are concerned, as we have had since using your grate. In moderate weather we heat and ventilate four rooms below and three rooms above.
S. B. AMORY,
Fond du Lac.

The grates in my library, also in hall, both of which convey heat above, give excellent satisfaction. They are also elegant in their finish and style.
F. N. FINNEY,
Gen'l Manager Wisconsin Central Ry., Milwaukee.

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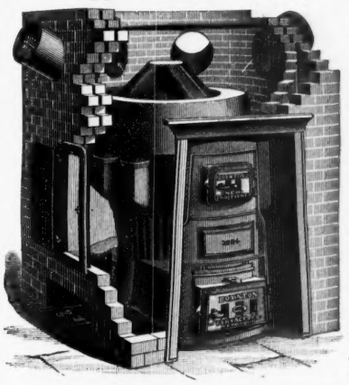

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Under the auspices of the Western Manufacturers' Mutual Insurance Co., it stood the test of super-heated steam to 720 degrees without showing any change externally, while the other coverings showed signs of charring below 350 degrees.

It has been exposed to the weather 8 years without injury.

It may at any time be removed and re-applied.

This covering will not radiate heat, nor burn or impart fire to surrounding surfaces and will remain uninjured, doing no damage to the underlying metal under any conditions.

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do do	28	20 "	284.4 "
1 Cement and 6 Standard Sand	7	6 "	85.3 "
do do	28	10 "	142.2 "

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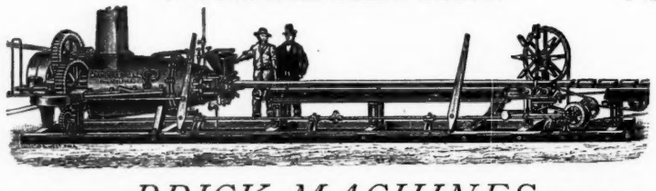

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CANAL SINKS, ETC.

[*At Welland Canal, Canada.*

DEPARTMENT OF RAILWAYS AND CANALS,
OTTAWA, December 9, 1885.

Sealed tenders, addressed to the undersigned and indorsed "Tender for the Welland Canal," will be received at this office until the arrival of the eastern and western mails, *on Monday, the 25th day of January next* (1886), for raising the walls of the locks, weirs, etc., and increasing the height of the banks of that part of the Welland Canal between Port Dalhousie and Thorold, and for deepening the summit-level between Thorold and Ramey's Bend, near Humberston.

The works throughout will be let in sections.

Maps of the several localities, together with plans and descriptive specifications, can be seen at this office on and after Monday, the 11th day of January next (1886), where printed forms of tender can be obtained.

A like class of information relative to the works north of Allanburg will be furnished at the resident engineer's office Thorold, and for works south of Allanburg, plans, specifications, etc., may be seen at the resident engineer's office, Welland.

Contractors are requested to bear in mind that tenders will not be considered unless made strictly in accordance with the printed forms, and, in the case of firms, except there are attached the usual signatures, the nature of the occupation and place of residence of each member of the same; and further, an accepted bank check for the sum of two thousand dollars or more, according to the extent of the work on the section, must accompany the respective tenders, which sum shall be forfeited if the party tendering declines entering into contract for the works, at the rates stated in the offer submitted.

The amount required in each case will be stated on the form of tender.

The check or money thus sent in will be returned to the respective parties whose tenders are not accepted. This Department does not, however, bind itself to accept the lowest or any tender.

By order, A. P. BRADLEY, Secretary.

POSTOFFICE.

[*At Peterborough, Ont.*

DEPARTMENT OF PUBLIC WORKS,
OTTAWA, December 7, 1885.

Sealed tenders, addressed to the undersigned, and indorsed "Tender for Public Buildings at Peterborough, Ont.," will be received *until Tuesday, the 20th day of January next*, inclusive, for the erection of public buildings for the postoffice, and the customs and inland revenue offices, at Peterborough, Ont.

Plans and specifications can be seen at the Department of Public Works, Ottawa, and at the office of J. E. Belcher, Architect, Peterborough, on and after Friday, the 18th day of December next.

Persons tendering are notified that tenders will not be considered unless made on the printed forms supplied and signed with their actual signatures. Tender for each building to be separate, and forms will be supplied for each.

Each tender must be accompanied by an *accepted* bank check, made payable to the order of the Honorable the Minister of Public Works, *equal to five per cent* of the amount of the tender, which will be forfeited if the party decline to enter into a contract when called upon to do so, or if he fail to complete the work contracted for. If the tender be not accepted, the check will be returned.

The Department does not bind itself to accept the lowest or any tender. By order, A. GOBEIL, Secretary.

SCHOOL-HOUSE.

[*At Cincinnati, O.*

Sealed proposals will be received at the office of the Board of Education, Public Library Building, *until 12 o'clock, noon, Monday, January 18, 1886*, for labor and material required for building addition to the Twenty-eighth District School Building, Browne street; also, for building new schoolhouse, twelve (12) rooms on Thirteenth District colony lot, Vine street, according to plans and specifications on file at the office of Superintendent School Buildings, No. 287 West Ninth street, Cincinnati, O.

Bids must be upon blank forms to be obtained at this office.

Each bid must contain the name of every person interested therein, and must be accompanied by a sufficient guarantee of some disinterested person in a penalty equal to the amount of the bid; that if the bid is accepted a contract will be entered into, and the performance of it properly secured.

All bids must be addressed to George O. Dechebach, Chairman Building Committee, and plainly marked bid for the Thirteenth District or Twenty-eighth District improvement.

The right is reserved by the Board to reject any or all bids. By order of the Board of Education.

ROBT. G. STEVENSON, Clerk.

STONE AND BRICKWORK.

[*At Minneapolis, Minn.*

OFFICE OF SUPERVISING ARCHITECT,
TREASURY DEPARTMENT,
WASHINGTON, D. C., December 21, 1885.

Sealed proposals will be received at this office *until 2* P.M., *on the 20th day of January, 1886*, for all the stone and brickwork for the superstructure of the postoffice, etc., building at Minneapolis, Minn., in accordance with drawings and specifications, copies of which and any additional information may be had on application at this office or the office of the superintendent, on and after January 2, 1886.

Bids must be accompanied by a certified check for $2,000 for stone and $1,000 for brickwork.

M. E. BELL, Acting Supervising Architect.

WATER-PIPE.

[*At Abington, Mass.*

OFFICE OF WATER COMMISSIONERS,
ABINGTON, December 9, 1885.

Sealed proposals for laying about 22 miles water-pipes for the towns of Abington and Rockland will be received at this office *until 2 o'clock*, P.M., *on the 15th day of January, 18 6.*

The right will be reserved to reject any and all bids.

Blank proposals, specifications, and information as to the conditions of contract will be furnished on application to this office. GEO. A. BEAL, Secretary.

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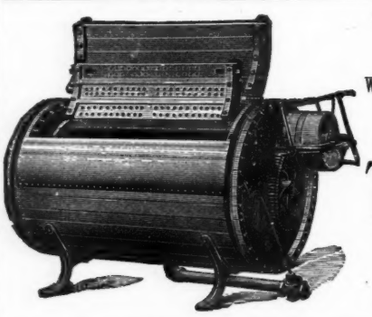

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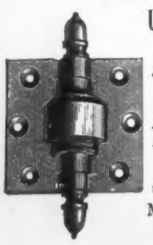

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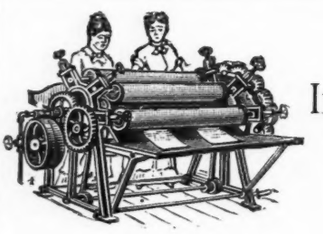

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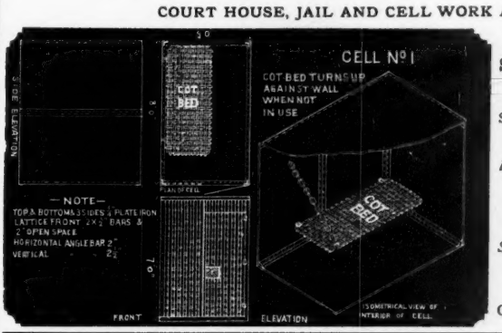

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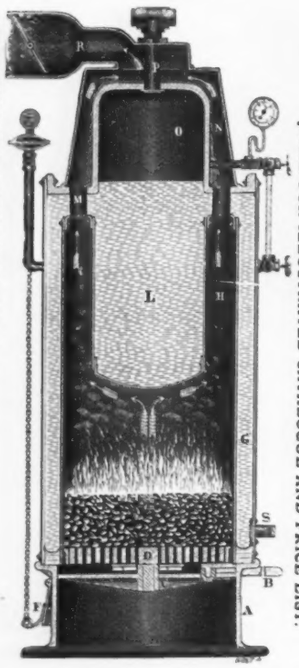

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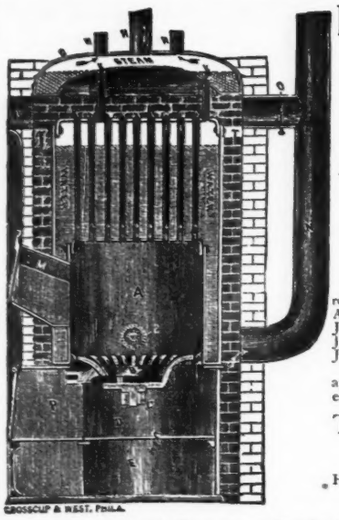

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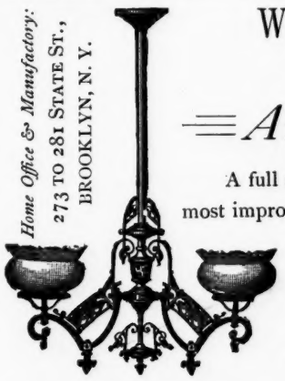

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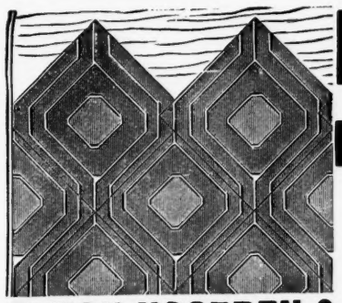

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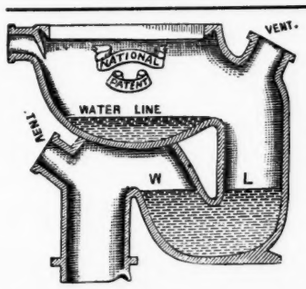

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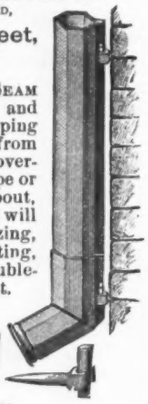

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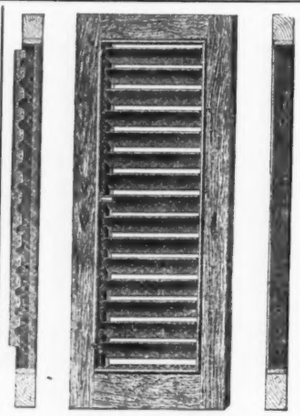

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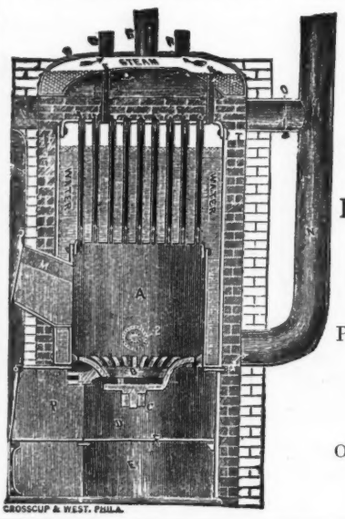

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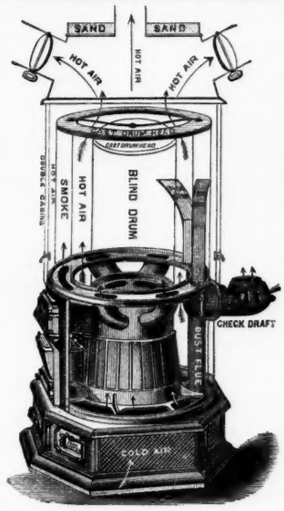

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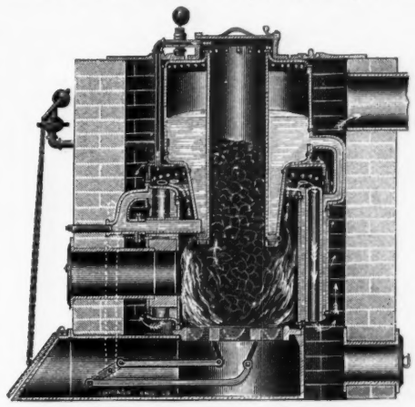

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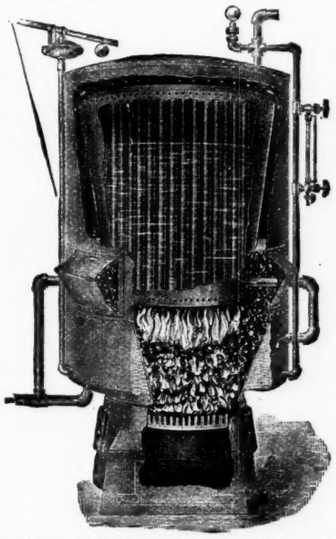

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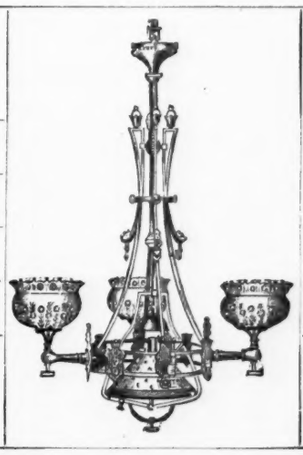

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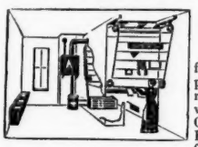

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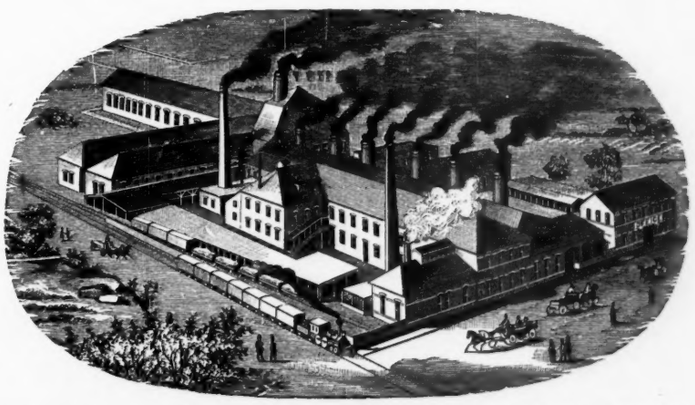

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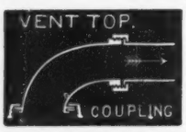

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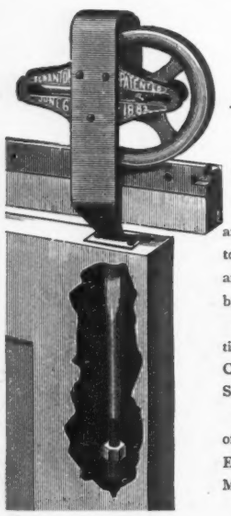

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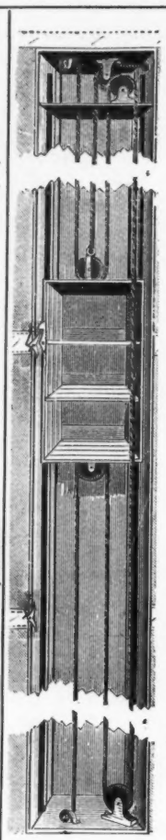

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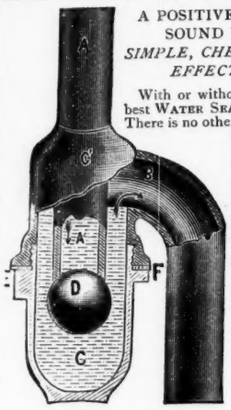

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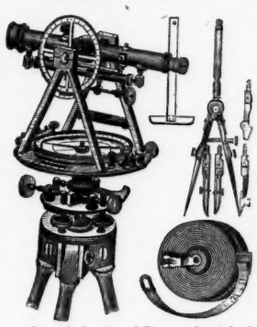

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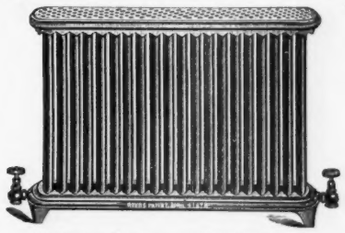

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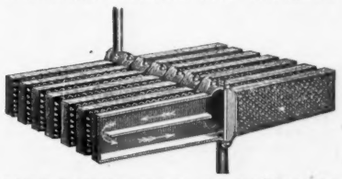

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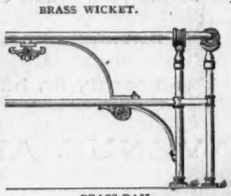

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